IN THE UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF MISSOURI
WESTERN DIVISION

MAXUS METROPOLITAN, LLC,	)	
	)	
Plaintiff,	)	No. 20-cv-00095-FJG
vs.	)	
	)	
TRAVELERS PROPERTY CASUALTY COMPANY OF AMERICA,	)	August 2, 2023
Defendant.	)	

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TRANSCRIPT OF JURY TRIAL - VOLUME 7 OF 8
BEFORE THE HONORABLE FERNANDO J. GAITAN, JR.
UNITED STATES DISTRICT COURT JUDGE

Proceedings recorded by electronic stenography
Transcript produced by computer

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WEDNESDAY, AUGUST 2, 2023

(The following proceedings were had out of the presence of the jury:)

THE COURT: Good morning. I guess my first order of business, defendant has a motion to present to the court.

MR. ELY: Yes. Mr. Ackerman is going to handle the Rule 50 motion.

THE COURT: Okay.

MR. ACKERMAN: Good morning, Your Honor. I hope you have the outline forming the basis for our Rule 50 motion which we've also filed this morning in writing.

I'll be happy to outline briefly orally the basis for our Rule 50(a) motion which we've also submitted this morning in writing.

So the first argument that we make is that under the policy's concealment provision, which states that the policy coverage is void in case of any fraud, intentional concealment, or misrepresentation of material fact by new or any other insured at any time concerning a claim under the relevant part of the policy, that coverage is void in this case.

We believe the evidence presented at trial is undisputed that Maxus intentionally concealed material information from Travelers regarding both the combustion byproducts, test results that were not provided and were

concealed and told not to be put into a report, as was testified yesterday, and also the sprinkler break in April of 2019, which was not disclosed in the May 1st, 2019, letter that we've seen a number of times in the course of the trial.

This -- and we have several arguments in addition that are alternative arguments for partial judgment as a matter of law.

So the second piece of our motion relates to the claim for the remediation of the combustion byproducts, the approximately $15.6 million claim, that is essentially the heart of the plaintiff's case. And we have two arguments that we make for judgment as a matter of law on that claim.

So the first argument is that Maxus has not established direct physical loss of or damage to property under Eighth Circuit law because the only evidence that's presented of combustion byproducts in phases 1 through 4 that allegedly warrant the remediation that was done is that they were present at a microscopic level. So it's clear no one has testified that they saw any combustion byproducts visually other than these couple of photos of an HVAC diffuser, and that does not rise to the level of direct physical loss.

It's clearly something that could simply be wiped off, and Mr. Irmiter testified it was wiped off before he had tested it, and thus there's no test results as to what that substance was at all. It never was confirmed as to whether it

was combustion byproduct or not.

And then, second, the alternative piece of our argument on that issue is that the jury cannot reasonably conclude on the evidence presented that it was necessary to do the remediation, the $15.6 million remediation that was done, and that's because there's been no expert testimony that that remediation was necessary; that was, the combustion byproducts were identified allegedly by microscopy. But even if you assume that to be true, no one with any scientific knowledge or experience has testified that you have to do this type of remediation because of the presence of the combustion byproducts.

The only testimony on that issue was by Mr. Irmiter as essentially a fact witness. He's not qualified as an expert on that issue, has no scientific background at all.

And then our next argument relates to the water infiltration into phases 1 through 4 from the ember holes. Our argument on that point is that the water infiltration was not -- did not occur during the policy period. The plaintiff has not introduced evidence that can demonstrate that that water infiltration occurred during the policy period.

So this policy expired on September 30th of 2018, and there's no evidence that the water infiltration occurred due to problems with the roof from the fire during the period before the policy expired.

There's testimony that those holes allegedly were found and the water damage underneath was found many months later, and there's been no evidence that no -- that there was rainfall during those -- the periods right after the fire that would have caused this damage. There's no testimony to that effect.

The -- we also believe there's insufficient evidence to support the business income and rental value claim with respect to phases 1 through 4. That's essentially for the same reasons that I've articulated based on the evidence presented.

The reason for the business income loss was the eviction of the tenants, and that was for the purpose of doing the remediation project. So essentially if there's no coverage for the remediation project for the reasons I've articulated and the ones that we've included in our brief, then there's also no evidence sufficient for the jury to find business income and rental value losses based on that -- based on the need to evict tenants allegedly for the remediation project.

And then, finally, we believe there's insufficient evidence to support Maxus' vexatious refusal claim. Based on the evidence presented, Travelers had reasonable grounds for its position, and there were bona fide disputes during -- concerning coverage and the amount of loss.

There's obviously a lot of facts that go to that, but Maxus' central claim here is the microscopic presence of these combustion byproducts. We've heard a lot of testimony about how really that was a novel claim, it's not something that we'd seen before.

Scientists have said there's no real standard for what constitutes a microscopic presence of those combustion byproducts, and Travelers had reasonable grounds to dispute that claim, which is really the vast majority of this case.

Travelers also was entitled to investigate the faulty construction. We've heard Mr. Irmiter testify about how this was one of the top ten worst buildings he's ever seen. Travelers was entitled reasonably to investigate that and, therefore, did not act vexatiously in doing so.

We've also -- as indicated earlier, there's plenty of evidence that Maxus withheld information from Travelers during the course of its investigation, including the test results and the sprinkler leakage.

And for that reason and the other ones we articulated in our brief, the jury cannot reasonably conclude that Travelers acted vexatiously and without any reasonable cause in this case.

THE COURT: Response?

MR. ABRAMS: Your Honor, would you like a brief reply?

THE COURT: Yes.

MR. ABRAMS: Again, I'm using the phone just because we saw this motion just a few minutes ago, but I'll go briefly.

On the concealment issue, the evidence yesterday from SELC was on the sprinkler break. He was there. They cleaned it up the next day. Didn't cause damage. This is a mountain out of a molehill. The evidence is that there was a sprinkler break, didn't cause the damage, and it was cleaned up. No reason to report.

One of the best evidence is from the guy who was there the next day who said, Yeah, I saw a little water spot the next day, and it was cleaned up.

On the direct physical loss, Your Honor, Travelers paid for the remediation of soot in phase 5. There's no question -- and they've admitted that that is a -- it can be a covered loss under the policy. What they're saying is, Well, it was too small, and it didn't result in damage to phases 1 through 4. We disagree.

We think that there's plenty of evidence that that's not the case. And under the definition and the law in the state of Missouri, that's damage to property.

On this notion that, okay, well, the damage didn't occur during the policy period because there's some water damage to the roof on 1 through 4. If the ember holes are

caused by the fire, rain comes in and damage results afterwards, that is classic proximate cause that's covered.

On business interruption, frankly, we just disagree with counsel, and Michelle Pienta's testimony speaks for that. It's not only 1 through 4, but it's also 5 through 6 where we have lost rents. We had very detailed testimony on that.

Finally on vexatious refusal, Your Honor, we think there is plenty of evidence in the way that Travelers has behaved in this manner, the way that they've handled their claim, that there's enough evidence to submit to the jury on vexatious refusal.

THE COURT: Okay. I'm going to take the matter under advisement. We'll proceed.

I think Patricia gave you rough drafts of the instructions. I want you guys, when we have a break, to take a look at that. And I've got a potential problem that may require me to be away this afternoon. I'm trying to resolve it now. But even if it comes to pass, you know, we'll still have an opportunity to get preliminary discussions on the instructions either directly with me or with Patricia because she and I spent a lot of time talking about it.

In the worst-case scenario, we'll meet in the morning at eight o'clock to finalize the instructions and submit as planned.

MR. ELY: Okay.

THE COURT: This is all worst-case scenario.

MR. ABRAMS: Your Honor, I missed the beginning of it. You said that you may have a problem late in the afternoon, and we may have to do the final jury instructions in the morning?

THE COURT: Yes. What I hoped is that once you guys go through instructions, we'll be in a position to make it brief in the morning.

(The following proceedings were had in the presence of the jury:)

KURT D. MULDER, being duly sworn by the courtroom deputy, testified:

DIRECT EXAMINATION BY MR. ELY:

Q Could you state your name for the record, please?

A Kurt D. Mulder.

Q Mr. Mulder, where do you reside?

A Birmingham, Alabama.

Q Are you currently employed?

A Yes.

Q With who?

A Engineering Design and Testing Corporation.

Q How long have you been with Engineering Design and Testing Corporation? Is it okay if I say EDT?

A Yes. That's actually what we call it.

Been with them ten years.

Q Okay. And what is your job with EDT?
A I am the district office manager, engineering manager and structural forensic engineer.
Q Okay. And are you a licensed engineer?
A Yes.
Q In how many states?
A Five, I believe.
Q Now, prior to coming to EDT, what was your work experience?
A Prior to that, I was a land developer, general contractor, home builder; did that for ten years prior to EDT. Before that, I was a design engineer, worked in commercial, residential projects and such as that. And then prior to that, I was -- basically my college, high school years, I was a carpenter and working at framing houses and such.
Q Okay. When you mentioned you were a home builder, did that also include the construction of apartments?
A Yes, yes. We did multi-family and commercial as well. I was the general contractor.
Q Okay. So walk us through, if you would, your educational background, please.
A Well, of course, I graduated high school, and then I attended the University of Tennessee where I received a degree in civil engineering.
Q Okay. What year was that?

A I graduated in 1995.
Q Okay. So do you hold any particular certifications that are applicable here?
A No. I mean, at one point in time, I did have a -- I was a certified fire and explosive investigator, but I let that -- I wasn't really using it, per se; so I let that certification go.
Q Okay. So let's talk about this claim specifically. When were you -- around the time when you were first contacted by Travelers to start working on this claim?
A I believe that was July of 2019 or slightly before that.
Q Can you tell us what you were asked to do?
A I was asked to evaluate the structure of phase 5 of the Metropolitan due to an adjacent fire as well as some of the siding in the proximity of the fire of the Metropolitan.
Q And did you inspect phase 5 at some point pursuant to those requests?
A Yes, I did.
Q Do you remember the date of that?
A The exact date, no, but I believe it was July 2019.
Q Okay. So July 9th, does that ring a bell?
A Yes.
Q Okay. So you showed up at the Metropolitan on July 9th, 2019. The scope of your inspection was limited to phase 5; is that correct?

A Correct.
Q Okay. When you got to the Metropolitan, who did you meet?
A Oh, shoot. I don't remember exactly whose name it was. I'm sorry.
Q Fair enough. Was it a representative of Maxus or Bomasada or whom?
A I believe it was a representative of Bomasada.
Q Okay. So let's talk about -- let's walk through your inspection.

MR. ELY: If we could pull up Defendant's Exhibit 188, page 35.

Q (BY MR. ELY) So describe for us, generally speaking, what you observed about the state of the construction of phase 5 on July 9th, 2019.
A Well, the building was in a dried-in condition when I was examining it, which meant that it was closed in from the weather. But it was in just a framed condition. It did not have any interior finishes yet or insulation.

The state, as you can see here, there had been some portions of the flooring, which had been removed. And an investigation of what I was tasked with, I found that portions of the OSB, which were still present, were damaged due to moisture intrusion.
Q Okay.

MR. ELY: Can we go to page 38, please.

Q (BY MR. ELY) Tell me what we're looking at here, please.

A Right here, this is what normally would be -- this is the plumbing which would be under, I believe, the kitchen sink. So you have two different shades of OSB, what's going on here.

The darker gray portion, which is around the plumbing, I would assume they didn't want to remove due to the plumbing. So they left it in place. That's the original OSB. And it is surrounded by new OSB, which has been placed. And then you also have a section there at the top, which is the OSB is missing.

Q Okay. So is this representative of kind of the stage of repairs on the interior subfloor at the time you were there?

A In the upper portion of the building, yes.

Q So just in -- and just for clarification, these are photographs you took at your inspection, correct?

A Correct.

Q Okay. So walk me through what you were looking at at the Metropolitan -- at the phase 5 of the Metropolitan at the time. Did you take a look first at the wood framing?

A Yes. They basically took me to phase 5 and let me go on my own recognizance. And so basically I went through the entirety of phase 5, started at the top examining -- looking up first, starting at the roof, and the structure there, and

then examining the wall structure down to the floor structure, and then continued down through all the different floor levels of the phase 5.

Q Okay. With regard to the framing, did you find anything that you could equate to damage from the fire to the interior framing?

A Well, on interior framing, you're looking for obviously pyrolysis, which is when the wood heats up and sap actually starts to come out of the wood. And that actually shows you that there's a weakening of the wood due to heat exposure.

That, you're looking for charring and similar byproducts of a fire, which neither of those things did I see.

Q Okay. And so once you've taken a look at the framing, let's talk about your inspection of the subfloor if we can, please.

Tell me what you observed of the subfloor.

MR. ELY: Can we pull up page 111 and split it with Defendant's Exhibit 185.

Q (BY MR. ELY) Okay. So tell me what we're looking at on the left, please, Mr. Mulder, with regard to the subfloor.

A What you're seeing here is one of the rooms that had been replaced with the OSB in the flooring. You can see again where the kitchen plumbing was. Here, that you can see there's old OSB surrounded by new OSB as well as a division point here where you have new OSB versus old OSB.

The old OSB tended to be swollen and have -- be kind of raised, rough texture, which indicated that it had experienced moisture exposure that affected the wood.

MR. ELY: Can we go to page 191, please, on the left.

Q (BY MR. ELY) Is that an example of what you're talking about with the old damaged subfloor?

A Exactly. So what you're seeing here is you can see the joints of the sheathing boards, that the swelling has caused them to raise up and become pronounced, especially right here. You can see where the corner of the board has really become pronounced. As well as on the left, you can really see the texture of the board, which it's -- that's -- both are indications that those boards were exposed to high levels of moisture.

Q Okay. So -- on July 9th, 2019, what was your understanding of the source of water in phase 5?

A The understanding during that examination was it was exposed to water during firefighting activities from phase 6.

Q Okay. And were you able to identify -- so let me back up.

So with respect to what you saw out there, you saw various stages of the subfloor. We saw the open space that looked like some had been removed but not replaced?

A Correct.

Q Correct?

We saw some other areas where removal had taken place and replacement had been completed, correct?

A Correct.

Q And then we saw some other areas where neither had taken place that were still damaged?

A Which is what's shown, yes.

Q And so were you able to make a determination of the areas of damage of the subfloor in that July 9th, 2019, inspection?

A Yes, I was. Can we actually zoom in on the map on the right just to phase 5 so we can actually just see that? Is that possible?

MR. ELY: Yeah. Go to the top right corner. The top right quadrant would be -- there you go. Great.

A Yeah. Okay. So looking at that, you see obviously it's kind of a C shape. You have a courtyard in the middle. Starting at about just below the center of the C shape, you see a 453353. During my examination you could tell that the OSB flooring had been damaged pretty much from the 53 apartments coming up front to the bottom portion of the picture, which I refer to as the front. When I say front left, right, back, I'm referring from looking at phase 6 towards the building, phase 5.

So most of the 57s, I believe the flooring was --

had been removed and wasn't present. So it wasn't really as part of saying that was damaged. So I did identify that through the 53, 54, 55, and 56, the OSB flooring was damaged and should be remediated.

Q Okay. So in addition to looking at the framing, looking at the subfloor -- I understand you made an inspection of the siding and the windows at the time, right?

A Correct.

Q Was it your -- were you aware as to the stage of repairs that had taken place since the fire in phase 5 when you conducted that inspection on July 9th?

A I was not informed of any repairs having being conducted at the facility.

Q Okay. So your observation that there was no damage to the siding and no damage to the windows, you now know that the repairs had already been made?

A Yes. I know that now.

Q So putting that aside, the last thing you looked at, I believe, was some water intrusion in the courtyard area of phase 5; is that correct?

A It's not the last thing I looked at. I looked at the roof on phase 5 as well when I was there.

Q All right. So what did you observe from the roof on phase 5 when you walked in?

A It was pretty nice. It was not damaged.

Q You've come to learn since then that what you were looking at was the newly-replaced roof?

A Correct. I did not know at that time that that was new roofing.

Q So with regard to the additional water that you found --

MR. ELY: Can we go to page 201 on the left side, please. Zoom back out of that map.

Q (BY MR. ELY) So while he's pulling that up, can you tell us -- just kind of describe what you were -- describe what you learned about the additional water that you found in phase 5, water damage you found in phase 5.

A Okay. So looking at the -- again, the C shape, you have the -- what I would consider the front wall of the courtyard or the bottom of the courtyard if you're looking at the picture.

I determined that looking -- you can see on the picture on the left that there was long-term water intrusion occurring in the back wall. You can tell by the amount of staining there that that was long term, as well as the fact that if you see there as well on the bottom that it was still wet. So that was an active area of water intrusion at that time.

It started at the top floor and continued down in the same area of the wall all the way down through the floors, indicating that it was starting at the top and occurring all

the way down.

Once I saw that it was there, I examined it at the exterior to try to determine what was causing or -- or why the water was intruding at that location.

Q Okay. Can you point to the map as to where this -- on the -- where this photograph is generally?

A Right there.

Q Okay.

MR. ELY: So can we go to page 199, please.

Q (BY MR. ELY) And describe for us what you -- I think you just mentioned you went outside to take a look at the stucco and see the source of the water. Tell us about that.

A Correct. I went out on the balconies located right here. You can see them on the map. I went out on the balcony and looked back at the building to try to determine what could be the possible source. And when I looked, you could see that there was an intersection of siding and stucco at that location.

Q Okay.

MR. ELY: Go to page 200, please.

A You can also see -- so, one, you have the intersection of the stucco and the siding as well as a parapet wall intersection with the roof where there's a gutter in it. This aligned perfectly with where the water intrusion was in the inside, indicating that this was where the water was

intruding.

As you can see here, there's not -- there's not any obvious damage to what you're looking at. The stucco is intact, the siding's intact, gutter's intact indicating that the possible -- the most likely source of this was a construction defect within that intersection.

MR. ELY: Can we go to page 192, please.

Q (BY MR. ELY) Is this another photo in that same area?

A Yes, it is.

Q Okay.

MR. ELY: Go to 194, please.

A Same wall. You can see through the window that you can see the opposite wall of the building of phase 5 that -- I would say I guess the top portion of the C.

So, again, you're looking at that wall. That water is coming down through that area, and it's moving along the bottom of the wall.

Q (BY MR. ELY) Okay. So with respect to the water that you saw in the courtyard, if you can circle that again for me, Mr. Mulder, what area that was.

A (Witness complied.)

Q Were you able to determine whether that water had any relation to the phase 6 fire?

A Yes. Considering phase 6 is on the opposite side of the building and it's -- there's -- no fire damage was apparent at

that area, the fact that it was still wet, showing that it was an ongoing situation, the amount of biological growth and water that you had there had been long and ongoing.

The firefighter activities would have been on the other side of the building, not inside the courtyard, facing away from the building. So along with that, I made the determination it was most likely a construction defect.

Q So at some point, you became aware that there had been a sprinkler line break in phase 5, correct?

A Correct.

Q And you didn't learn that until when?

A I believe after the publication of my report, and I think about a year later. I think that would have been March of 2020.

MR. ELY: Can we go to Defendant's Exhibit 25, page 1, please.

Q (BY MR. ELY) So tell me what -- when you -- tell me what you reviewed with regard to the sprinkler line break in phase 5. You issued a supplemental opinion later?

A Correct.

Q I'm trying to go through the basis of that.

A Well, I reviewed letters between Maxus -- and like here is an example of one -- which was discussing the sprinkler break, I believe immediately, and that that happened during remediation of the floor from the original damage.

So I reviewed the multiple letters or emails, some event logs that I believe were the maintenance people that were -- or construction people that were doing the remediation of the actual break itself.

I reviewed videos and photographs of the facility after the break and during the actual water intrusion. And I believe there was some other material that I reviewed, but it's not coming right to mind at this second.

Q All right.

MR. ELY: Let's go to page 5, please.

Q (BY MR. ELY) I think you mentioned this, Mr. Mulder.

MR. ELY: Go back to page 4 so we can have some context, please, Chris. Page 3, please.

Q (BY MR. ELY) So is this something you reviewed in terms of your supplemental opinion?

A Yes, it was one of the things I believe I reviewed.

MR. ELY: Can we go to page 5 now, Chris.

Q (BY MR. ELY) And you understood that to be an incident report from Maxus about the waterline break?

A Yes.

Q And you reviewed the described incident in detail section?

A Yes, I did.

Q So --

MR. ELY: Chris, go to page 6, please, and zoom in

on the photographs, if you would.

Q (BY MR. ELY) Are these the photographs you were referencing earlier that you reviewed?

A I believe so, yes.

Q And so after reviewing this information, after learning about the sprinkler line break, tell me what -- how you changed your opinion about the cause of the subfloor damage in phase 5.

A Well, there was an original ATC report, I believe, that I reviewed as part of this that actually identified what the damage was from the original firefighting activities, compared that to what I had found and concluded as water damage and based on that, minused off what the ATC damage was to mine and determined that was a damage which occurred from these -- this incident.

Q And is it true that when you changed your opinion on the cause, were you aware that the -- that Travelers had paid for the entire subfloor to be replaced?

A Yes, I was, because they went off of my report, which stated they should replace the entirety of it, yes.

Q Okay. And with respect to how this water -- sprinkler line rupture was remedied, what did you learn about how it was remedied?

A One, that they punched holes in the floor and let it run through, and that was pretty much it. They didn't bring in

condensers to pull the water out of the air. They didn't have fans blowing on it, both of which are pretty standard for drying out a system. They basically closed up the facility and left it as is.

Q Okay. And did that factor into your opinion or your -- to the change in your opinion that damage to the subfloor had been caused by the sprinkler line break?

A It did, due to the fact that that moisture remained on the floor. Also -- and OSB is treated with a certain amount of water resistance. During construction, you're going to get rain. It's going to get wet; so it does have -- it is treated for some moisture resistance.

Part of the problem here is you did have large portions of it where it had been cut due to the fact of doing the remediation, you cut the boards to size, they're cutting boards, removing it. The treatment is only on the exterior of the board.

As soon as you cut any type of wood that's treated, the cut end is not treated. So now you have multiple areas in this part of the facility where you have exposed wood which is not treated where the water is going to be running over the edge and such as that and getting into the boards.

Q Okay. So we mentioned your July inspection. At some point, you were called back out to the Metropolitan to do additional work, correct?

A Correct.
Q Was that in the timeframe of March 2020ish?
A I believe so, yes.
Q So tell me about what you were tasked with doing at that time.
A At that time, that is when I believe FBS had been brought in and was at the facility. So I was tasked to go out and meet with FBS and assess what their reports of damage were.
Q Okay. And so you mentioned earlier in your July 9th, 2019, inspection, you were basically left alone to inspect phase 5, correct?
A Correct.
Q Was that the case in the March inspection with --
A No. That was a guided tour with Mr. Franklin Martin.
Q Okay. And what -- was Mr. Martin pointing to areas of damage that they were claiming was fire damage?
A Correct. And from firefighting activities.
Q Okay. And so you -- as part of that, did you go back into phase 5?
A Yes, we did.
Q Okay. And what was described to you by Mr. Martin -- what was his claim at that time?
A His claim was that, one, firefighting activities had ended up spraying water through the flashings and such of the

facility coming in, intruding in, as well as embers burning the roof, causing holes and resulting in water intrusion.

MR. ELY: Can we go to page 571, please.

A As well that the facility had been engulfed in the smoke cloud, resulting in high levels of temperature, damaging portions of the materials in the facility.

Q (BY MR. ELY) So let's just focus on phase 5 a minute, remove phase 1 through 4. I know this is an odd photograph. It's forcing me to have to turn my head.

What are we looking at here? This is a photograph you took in March of 2020?

A Yes. This is actually sideways. So the left of the photograph is actually the top of the photograph. So you're looking at the floor above, which actually I believe is the roof structure in this instance.

And if you look here, this is actually an ongoing leak. This is where they put plastic to hang below it to try to catch the water, which was coming through the roof at that point in time.

MR. ELY: And page 572, please.

A That's below it, and you can see where they put a bucket as well below it to catch water.

Q (BY MR. ELY) So your observations in phase 5 in March of 2020, you observed active water leaks through the roof?

A Yes, I did.

Q And March 3rd, 2020, was this the old roof from the fire, or was this a new roof?

A Actually even when I showed up to this meeting, they had not informed us yet that the roofing had been replaced. It was with my discussions with Mr. O'Neil with J.S. Held was present at the same exact on-site, that he informed me that this was a new roof at that point in time.

Q Okay. So you observed active water leaks in the phase -- the new roof of phase 5 --

A Correct.

Q -- on March -- in March of 2020, correct?

A Correct.

Q Second thing, did you revisit the area of the construction defect around the courtyard also?

A As in travel outside, walk around outside?

Q Did you walk back through those same water-damaged areas you identified in July?

A Most of them, yes.

Q Had any of those been remediated?

A No.

Q Okay. And the subfloor, what was the state of the subfloor at the time you walked through?

A Same condition it was in my original examination, except there was areas of active water leaks that were -- it was wet and causing further damage.

Q Okay. So based on your inspection of phase 5 in March of 2020, nothing had been done to change its condition or remediate any of those issues since your visit on July 9th, 2019?

A Correct. Nothing had been done.

Q Okay. So let's move over to phase -- the doughnut building. I want to know the -- and we'll go to --

MR. ELY: Please, page 305.

Q (BY MR. ELY) So, if you would, Mr. Mulder, can you tell us the first thing that was pointed out to you in the doughnut building by Mr. Martin as fire-related damage?

A I don't know if it was the first thing, but it was one of the things. This is actually the stucco portions of the exterior of the building. Mr. Martin stated that the smoke cloud had enveloped the facility causing high temperatures, which he reported damaged the siding and used these cracks as an example.

Q Okay. Were you able to make a determination as to whether -- is this an example of what he was showing you?

A Yes.

Q And were you able to make a determination as to whether these cracks were related to the fire or something else?

A Yes, I was. Heat expansion in stucco, I mean, there's -- the material is actually getting bare. So, I mean, it's expanding. That material has to go somewhere. It

just -- so it pushes in upon itself. And at some point within the stucco that's maybe weaker than another, it's going to tent up and separate from the substrate. And then after it tents up, that material is no longer attached. Portions can fall off, chip off, which is called spawling.

I didn't see that here. What I saw here was kind of straight line cracks or circular cracks, which are indicative of contraction. So stucco, when it cures, it shrinks, and that can -- you can see up at the top and bottom, there are controlled cracks there which are meant to actually try to alleviate that, hide it.

But in this instance here, you can see that it actually happened in the middle of the board as the board -- the top separated away from the bottom, and you get cracks.

Q Are these cracks something that's typical in a stucco facade on a facility?

A One that's improperly installed, yes.

Q So it's your opinion that what you were looking at were construction defects related to the stucco?

A Correct.

MR. ELY: Let's go to page 375.

Q (BY MR. ELY) Did Mr. Martin also raise issues with the hardie board siding on the building -- on the doughnut building?

A Yes, he did. At that time he still reported that it was

damaged from the fire. And, again, Mr. O'Neil informed me that that had been replaced prior to our on-site at that time.

Q Okay.

MR. ELY: Page 378, please.

Q (BY MR. ELY) Can you tell me what I'm looking at here?

A This is one of the locations of siding where you're looking up, and you can see that -- so this is a vertical line of butt joints. So it's where two pieces of siding meet laterally. They're supposed to be separated. But what you're supposed to have behind that is actually a piece of flashing.

So you can actually see the top of the underlying board, which you're not supposed to be able to see. It was actually supposed to be a piece of metal that comes down and covers that. That -- so when it rains, water doesn't come down and get through the butt joint.

What you're also seeing is the siding is curling off of the building, which is indicative of moisture intrusion in the siding and uneven drying, resulting in the siding curling as well as improper fastening.

Q So did you determine -- I guess my question is, was any of this siding heat damage from the fire?

A No, it was not.

Q What did you determine was the cause of the damage?

A Improper installation.

Q Let's go to page 317.

So it was also pointed out to you, as I understand, that there was a claim that there was ember damage to the phase 1 through 4 roof that was causing water intrusion. Is that -- am I correct about that?

A That is what Franklin Martin was telling me at that time, yes.

Q Okay. And so is this an example of what was pointed out to you?

A He wasn't really so much pointing stuff out as kind of making broad statements. This is one area that I saw. And so since he's making these statements, I'm -- that's what I'm looking for.

Q Okay.

A This being black in nature, I was like, Oh, makes sense to me that this might be what he's talking about, except this is material sitting on top of the roof. This is not more burns. This is not holes through the roofing. This is the material sitting on top of the roof.

You can actually see as well up here on top -- it's not drawing.

Q I've got a photograph.

MR. ELY: Please go to page 319, and we'll zoom in on that.

A All right. This is the wall above it. So first you can see on the top, there's actually where someone has actually

punctured the roofing on the parapet wall. You can also see that there's a lateral scrape leading up to that. So that is not material falling down on it. That is someone carrying something along it and abrading the roof.

Below that, you actually see where liquid has fallen on the roof as well, resulting in some of the little black globules again right there on the wall. This is indicative of someone actually spilling something on the roof.

So if you go back to the previous photo, this is after they spilled it on the wall. So they walked back across the roof spilling whatever it is they were carrying.

If you have a smoke cloud that's dropping debris on a roof, it's going to be random and widespread across the roof. It's not going to be in a straight line going across the roof. That is indicative of human traffic, foot traffic, someone carrying something and dropping it on the roof.

Q Okay.

MR. ELY: Can we go to 329, please.

Q (BY MR. ELY) Tell me what this is, Mr. Mulder.

A This is an area where I observed that there was a globule on the roof. I actually took the globule off and kept it. And you can see here that this was an area that, okay, this looks like it might be burn damage. Well, I think we're all familiar with how a cigarette burns, so to speak. A cigarette is an ember, right?

So if you go ahead and place that on anything, it's going to start burning at the center and burn outwards because that's the hottest point of the ember. Okay. It's not going to -- in this instance, you can see it's clean in the center. That's where the globule was. The actual damage to the roofing surface was outside of the globule.

So why is the center protected? Because that's where the material was. So some materials are -- caulks and sealants and such are not -- caulks and sealants.

So the center part, which is undamaged, was protected by the caulk that was sitting on top of it. If it was burning, you would expect that to be where the damage was.

In this instance, what you're getting is a reaction between the caulk and the roofing and oxygen. So that's allowing the chemical reaction, which is resulting in a burn around the globule, outside of it. So that is not indicative of a burn mark. That's indicative of a chemical reaction.

Q And did you -- you said you took that -- you took the globule that was there?

A Yes. That's from phases -- I don't know exactly which one, if it was phase 1 through 4.

Q Did you have that globule tested to see what it was?

A Yes, I did, along with some globules from phase 5 off the new roof.

Q Did you do that testing yourself?

A Our office did. But the materials engineer, Richard Edwards, in our office did the testing.

Q What did you determine this particular globule was?

A A caulk sealant type material.

Q Okay. So did you also walk the entire roof and take photographs to get the general condition of it?

A Yes, I did.

Q Okay.

MR. ELY: Can we go to page 282 with split screen with 185, Defendant's 185, please.

Q (BY MR. ELY) So this photograph on the left, did you take that photograph in March of 2020?

A Yes, I did.

Q Can you tell us what area of the roof this is depicting of the doughnut building?

A That would be looking that way.

Q Okay.

MR. ELY: Let's go to 283, please.

Q (BY MR. ELY) Tell us where you're standing here. So this is looking across the doughnut building?

A Yes. That is looking diagonally across, over top of the pool.

Q Okay.

MR. ELY: Let's go to page 286 on the left, please.

Q (BY MR. ELY) And is this the eastern side of the

doughnut building?
A Yes.
Q Okay. Can you point to where that is?
A (Witness complied.)
Q Okay. Is that the side that you understood was closest to the phase 6 fire?
A Correct.
MR. ELY: Can we go to page 390, please. Actually let's go to 415. Let me back up. Let's go to 390. I'm sorry.
Q (BY MR. ELY) Can you describe for us -- you see these black marks here?
A Yes.
Q Can you describe for us what you observed those to be?
A Those are scrape marks of something being drug across the roof and scraping the roofing.
Q And while you were walking the doughnut building roof, did you also -- did you observe mechanical damage such as that throughout the roof?
A Yes, I did.
Q Okay.
MR. ELY: So let's go to 415, please.
Q (BY MR. ELY) Can you show us on the map the area that's depicted here?
A That is actually over top of the stairwell that leads up

and down through the facility.

Q Okay. And then the last photograph.

MR. ELY: Go to 405, please.

Q (BY MR. ELY) Can you show us where this -- is this, I guess, astro turf?

A Yeah. It's kind of a lounge area they have up on the roof that you can see here's like a firepit and had some astro turf, plastic grass. It's actually depicted right here on the drawing, but that is up on the roof. And I believe it's in this area.

Q Okay. And what was the purpose of taking this photograph?

A Well, there's a large section of plastic grass on the roof of an area that was reported to have been engulfed in a high-heat cloud resulting in damage to the roofing and stucco and such as that.

This is -- there's no damage to this. There's no indication of a hot material falling on it. There's no melting. There's no darkening of the material. There was nothing. It was pristine.

Q Did you inquire as to whether this was the original turf that had been in place at the time of the fire?

A Yes, I did.

Q What were you told?

A It's the original turf.

Q Okay. So were you able to identify -- based on your view of the roof, were you able to identify anything you could term as ember damage to the roof?

A No, I could not. I was looking for burn-through. I'm looking for actual holes in the roofing, which Mr. Martin was giving us a tour this whole time. He did not identify. I did not see it. He didn't take us to a location, say, Right here is the damage I'm talking about. It was just broad strokes, There's ember damage to this roofing everywhere.

Q Did you see patches on that roof?

A Yes. There were some patches. But you're going to have patches in roofing. That's just -- it's damaged during construction. There's all sorts of things that can happen to it.

Q Did anybody at FBS point out to you that the patches were representative of ember damages?

A No, they did not. And if that would have been the case, I would have expected them to have taken me to a spot, said, Here's where we repaired the roof. And at that point, we did have a roofer with us. We were taking test cuts and getting into the roof. At that point, we would have been able to test that location.

Q So you also, as I understand it, examined the roof from a construction standpoint?

A Correct. Not in heavy depth, but I did.

Q Let's go to page 438 and tell me what we're seeing there, if you can explain it.

A This is actually over top of that stairway, which actually I think I mismarked it earlier. It's actually at the top left of the building, that area. This is actually an area where water was actually shown to us inside the facility coming into a stairwell. I believe we might have pictures of it later.

So we -- I definitely wanted to get in the roofing at this location to see what was going on. Why was there water during our examination present?

So we -- as you can see here, we actually took a portion, cut it back. And I asked for them to do it at a location where there was a lap so I could see what the fastener condition was.

You can see here as soon as we cut it back, it was roofing -- a thermoplastic roofing on top of the roof decking or the OSB board. It lacked a cover board and it lacked insulation.

Q So when you say "it lacked insulation," what would you -- what did you expect to see under this TPO membrane?

A I expected to see insulation sheathing. So it's going to be -- one, it's -- like I mentioned earlier, materials are not always compatible. So as soon as you cut back roofing such as a thermoplastic membrane, you expect to see a cover

board, which keeps it separated from what would be below that, which is insulation sheathing or IsoBoard, which is not necessarily compatible with the roofing. So you want to keep them separate because they will actually react with each other.

So I expected to see that here. Most roofing manufacturers require it for their warranty. It's also very important in controlling conditions within the facility.

Q Okay.

MR. ELY: Let's go to 439, another -- I think this is a better -- further picture of when you peeled it back. And then let's go to 441, please.

Q (BY MR. ELY) Can you tell us, Mr. Mulder, the same location, what are these black marks?

A What you're seeing here is you can see that there's black staining of where the majority of the board, which is indicative of long-term water intrusion into the area. But also fasteners react with the water when they're exposed to it and start to corrode. So that corrosion kind of starts to leach out into the wood. So those black stains are actually the locations of where the fasteners are.

Q Okay. I think we mentioned mechanical damage earlier. Let's just go to an example of that.

MR. ELY: Page 395, please.

Q (BY MR. ELY) Tell us what we're looking at here, please.

A Right there that's an expansion joint in the phase 1 through 4 area, and what you're seeing there is where something was drug across the expansion joint damaging the roofing.

Q And so with regard to this -- the lack of insulation that we saw, is that a code violation?

A To drag something across the roof or --

Q No. I'm sorry. With the lack of insulation?

A Yes. The Modern Energy Code requires that you have insulation in that area.

Q Okay.

A Which is part of the International Building Code, and it was adopted by the city of Birmingham, which is where this is located.

MR. ELY: So let's go to page 447.

Q (BY MR. ELY) Am I -- am I correct in understanding that FBS also took you into the interior of the doughnut building and identified specific areas of water intrusion it was claiming was related to the fire?

A Into select units and portions of the first floor. They did take us in, yes.

Q What am I looking at here on the left?

A This is actually again a sideways photo. You would have the floor on the left, and this is framing below a window. I believe this was unit 407, which is located -- I can't read

the numbers on the screen.

Q I believe it's in the inset over there to the left.

A Oh, that's right. It's in one of these. Yes, it's right here, which is away from the building where the fire occurred.

Q Okay. Is that -- that's over the lobby?

A Yes, that's it. It was located over here facing -- this window is outside. So this is facing this direction.

Q Okay.

A Facing away from the fire. And this was actually, as you can see, I have a moisture meter where I've tested this. It was actually wet at the time I was testing it.

Q Okay.

MR. ELY: Can we go to 459, please.

Q (BY MR. ELY) This is another area that was pointed out to you?

A Yes. This was unit -- I can't remember the exact number, but this is actually facing the parking garage. So it's in that -- facing that direction. Again, we're facing the outside.

This is more water intrusion adjacent to a window that was active at the time it was tested. It was wet.

Q So a number of these areas were pointed out by FBS. Were you able to determine the source of the moisture?

A Due to the fact that I'm facing away from the facility

and facing the parking garage, which was, I think, maybe 10 feet away from the building, it was just common sense. There was no firefighting activities in these locations. So we have since learned from review of the fire department logs that, no, there was not firefighting activities in these locations.

So at that point in time, this was most likely construction defect, which I believe after the fact and even publication of this report, that there was determined multiple construction defects were resulting in water intrusion at the facility.

MR. ELY: Can we go to page 462.

Q (BY MR. ELY) And I believe you mentioned when you were looking at the roof pictures, that there was a stairwell underneath that was actively leaking. Is this the picture of that stairwell?

A Correct, it is. As you can see, there's actually standing water in this stairwell, and to my memory, it had not rained that day.

Q Okay. Can you show us on the map where that was?

A (Witness complied.)

Q So in addition to the individual units and the stairwell, did FBS also take you into the lobby area?

A Yes, they did.

MR. ELY: Let's go to page 463, please.

Q (BY MR. ELY) Tell me what your observations were in the

lobby area. Is that Mr. Martin there on the left?

A I believe it is, yes, there, and a couple other individuals.

This is actually the lobby facing the pool house. This isn't the front lobby facing the exterior. So that would be the inner courtyard here and facing, I'll say, that wall.

Q Okay. So what are we looking at here?

A You're looking at a wall that's been experiencing long-term moisture exposure. You have a lot of dark staining. It's throughout the wall. It's not focalized necessarily at one point. So this is something where moisture has gotten inside and has permeated through the wall and causing the wood to exist in a moistened condition.

Q Okay.

MR. ELY: Let's go to page 466, please.

Q (BY MR. ELY) It's another picture of that area?

A Yes, it is.

MR. ELY: And 469, please.

Q (BY MR. ELY) This in the same area?

A This is, but this is a location where you actually do have it focalized in one area where you can see it's running in a vertical row coming down, and it's actually really accumulated there at the bottom. It's also very, very dark staining. So it's just -- that's indicative of something that's been occurring for a long time.

Q Okay. So, finally, did FBS also point you to some ground water issues?

A Some issues that were occurring at the bottom of the wall, yes.

MR. ELY: Can we go to page 507, please.

Q (BY MR. ELY) Can you show us on the map where this is?

A (Witness complied.)

Q Can you tell -- tell us what you're looking at.

A Right there, that is an exterior walk within what I believe we're referring to as the foyer. It's inset into the building. You can see there that there's a pattern of tile that was used within the foyer area and a brick paver-type situation to the front of that.

That there is the entrance to the building, and this is an exterior wall of the foyer, which is located right there on that side. You can also see here you have heavy corrosion-colored staining coming down from a low wing wall that protrudes from the corners of the pool area.

Below that you can see cracking of the material finishes running laterally along the corner as well as heavy brown-colored staining on the ceiling of the foyer.

Q Okay.

MR. ELY: Can we go to 510, please.

A Couple more things I want to talk about here, is you have areas of sediment that have accumulated on the floor of

the foyer.

This is the area within the exterior that hold water. I believe the original architectural plans for this building stated that it was the 2009 International Building Code that this building falls under. According to the 2009, I'll call it the IBC, the ground surface adjacent to a foundation should slope within 10 feet, should be 5 percent.

If it's an impervious surface, which is what we have here, it's a minimum of 2 percent. So as you can tell, if it's holding water, it's not sloped like it's required to be by the International Building Code. The main purpose of that requirement is to keep water away from the building.

Q Okay. Why is that important? We're talking about the bottom floor here on the grade. Why are we talking about the grading issues?

A Due to the fact that they're reporting this as damage from firefighting activities and the fire -- the moisture intrusion that occurred in these areas. Where I was -- that was what I was given as the reason why it happened. So, okay, let's look at it, and let's look at the data. Let's look at what happened here.

And almost immediately started finding construction issues, which lead to moisture intrusion, which it's -- there's no reason why in a courtyard, I mean, did they helicopter into here and fight the fire? Did they run through

the building and drag their hoses through the building? That was not reported. It wasn't in the fire department report.

I was told there were firefighting activities within this courtyard. Okay. Well, how did the water get in then? Because buildings are constructed or should be constructed to prevent water from entering them, such as during a rain event, which comes from the top down.

So in order for them to have fought this fire in this location, it would have to have been from the trucks from the top down. In that instance, you're seeing water just like you would during a rain event. Why would water have entered into this location then?

So now I had to find a reason why. Well, this is what I found. I found multiple construction defects within the facility that were leading to water intrusion.

Q Okay.

MR. ELY: If you could go to page 501 real quick, please.

Q (BY MR. ELY) Is this related to the area we were just talking about?

A Yes, it is. You can kind of see the angle of the wall there that you saw at the exterior of the foyer where the corners are. This is where the water is coming in at the bottom of the wall and starting to seep up and wick up through the wall. You can see it's darker on the bottom and it's

actually wet. And then you see this bottom portions of the studs are wet or at least stained, and then you can see where it dissipates away to nothing. This is indicative of water coming from the top and working its way up.

Q So to sum up with regard to the March 2020 inspection from areas pointed out to you in phase 5, areas on the roof of the doughnut building, the area on the interior apartments and the areas in the lobby and then the ground areas, were you able to determine the causes of those water intrusions?

A The vast majority of them, yes.

Q Okay. Were any of them related to the fire in your opinion?

A No.

Q Were they related to construction defects or faulty installation?

A Yes.

MR. ELY: Thank you. I'll pass the witness.

CROSS-EXAMINATION BY MR. ABRAMS:

Q Good morning, Mr. Mulder. I'm going to give you Defendant's Exhibits 38 and 40, hard copies. These are your reports because you may need to refer to them, okay?

A Okay.

Q All right. Mr. Mulder, I want to start with -- you don't know what Maxus -- the fire-related damages that Maxus is claiming here in this litigation, correct? You haven't

seen the exhibits and what Maxus is claiming is fire-related damage in this litigation?

A Beyond the material that I was given to write my reports and to review and such as that. So I have reviewed some of the damages, yes.

Q No, no, no. Different question. My question is, is you are not aware of what Maxus is claiming is fire-related damage in this litigation, correct, what they've submitted? You haven't seen that evidence, correct?

A I haven't seen what has been brought forth in this court case from the witnesses beyond what was given prior to court.

Q Back in 2020, right.

So are you aware that the pictures that you just were shown by counsel about water and construction defects, that Maxus isn't claiming those amounts in this litigation? You're not aware of that, right?

A I guess not.

Q Okay. All right. Let's do this chronologically.

Your first visit -- remind us when your first visit was to the Metropolitan.

A July of 2019.

Q July of 2019. Okay. And you were told at that point that a portion of the phase 5 -- portion of the phase 5 roofing adjacent to phase 6 had been damaged by falling and burning embers during the fire, correct?

A Correct.

Q And you were also told that a majority of the portion of the roofing that was damaged by the fire had been replaced prior to your first visit, correct?

A No, not prior to. I was informed of that after my second examination of the facility during the on-site.

Q Let me make sure I got this right. Didn't Mr. -- you can look at page 6 of your first report.

Didn't Mr. O'Neil tell you that a majority of the front portion of the roofing damaged by the fire in phase 5 had been replaced prior to your examination of the facility?

A All right. Let's go to background. Sorry.

Q I'm referring to the November 6th, 2020, report.

A That's July. November. So I want to see in my report where I actually detail that.

Please note paragraph 3, background information of the report that you're speaking of, of the June 26th report. It's page 5. Second examination of the facility was conducted by EDT on March 3rd, 2020, and a third on May 22nd. Second examination, you'll notice Mr. Taylor O'Neil was present. He was not present in my first one.

He informed me at the second examination, as I stated earlier, that's when the roofing had been replaced prior to my first examination.

Q Okay. So it -- we've got it correct, though, that the

roof that you saw when you inspected 5 was not the same roof that existed at the time of the fire, correct?

A That is correct, yes.

Q So -- and you were told by Travelers' adjustor, Mr. Gregory Bynum, that embers from the fire landed on the roof on building 5 burning holes into the roofing, correct?

A Correct.

Q And he told you that water applied -- this is the Travelers' adjustor, Mr. Bynum, who's not here, he told you that the water applied to the roof during the firefighting activities intruded through the burn holes, correct?

A That is what he told me, yes.

Q And he also told you that it flooded a portion of the interior of building 5, correct?

A Correct.

Q And based on those statements, your report concludes that building 5 was inundated with water from hoses by the fire department during the firefighting activities to prevent building 5 from catching fire. That was your report, correct?

A Because that was what I was informed of at that time, yes.

Q That was your report, okay. And your report concluded, and I'm quoting you, Therefore, the inundation of the structure of building 5 with water in combination with the reported holes burnt in the roofing embers, that a large

amount of water would be expected to have intruded into the interior of building 5, correct?

A Correct.

Q And you also state in that report -- well, you talked about the OSB flooring there, correct?

A I believe so, yes.

Q Yeah. And you say that when OSB is exposed to a large amount of water where the sheathing is inundated and stays wet for a period of time, the OSB sheathing can swell, cup, and start to lose cohesion between the compressed woodchips, which make up the sheathing, correct?

A Correct.

Q And you understood that after the phase fire -- I'm sorry. After the fire, there was a time where ATF had control of the building and people couldn't get into the building?

A At that point in time when writing my report, was I aware of that? I have since -- recently actually found that out. I did not know of that back in the day.

Q Okay. You ultimately concluded in your report that the observed damage to the OSB floor decking at the front portion of building 5 in apartments 253 through 256, 353 to 356, 453 to 456 was caused by water inundation of the OSB floor decking and resulted from firefighting activities, correct?

A I believe that is the conclusion if you're reading my report, yes.

Q So those were the conclusions you made when you first went to the Metropolitan, correct?
A Yes.
Q All right. Now, you also mention the -- an ATC report, a moisture mapping report, right?
A Yes.
Q Okay. And tell us who ATC is.
A They're the company that originally came in at the behest of Travelers, I believe, to determine the extent of the moisture damage within phase 5.
Q And ATC is a reputable firm?
A As far as I know, yes.
Q And they inspected phase 5 building in December of 2018, correct?
A I believe so. I know it was before my examination.
Q In fact, it was seven months before you got there, right?
A Right. Prior to the water main being cut.
Q Yeah. It was five months before the water main break, right?
A Correct.
Q And ATC -- you've reviewed the report, right?
A I have. I've not like -- within the recent timeframe, but when I did my report, yes, I did.
Q But you remember that ATC moisture mapped the facility

using visual examination and a moisture meter and thermography, correct?

A Correct.

Q And we've heard this before, but just to remind us what -- what's thermography mean?

A That's where you're looking for temperature differentials and determine if there's anomalies within the material you're looking at.

Q And you knew that that's part of the moisture testing process?

A Yes.

Q Okay. And the ATC report concluded that extensive water intrusion and microbial growth was on floors 1 through 4 of -- this is phase 5. And the photos and the moisture mapping showed that water intrusion on the ceilings, walls, floors throughout the building, correct?

A Yes.

Q And I have -- that's slide 3 that's right in front of you. That's what they concluded, and that was seven months before you got there, right?

A Yes.

Q Okay. Now, you are now aware that before you examined the Metropolitan in July of 2019, that repairs were made to fire-damaged portions of the facility, correct?

A Water intrusion portions of the facility as well as

damage to the exterior -- the exterior from the fire, yes.
Q Right. So, for example, the damaged siding and windows at the southern elevation of phase 5 and the eastern elevations of phase 1 through 3 had been removed and replaced with new material before your inspection, correct?
A I believe, yes, on the south side. I don't know if the east side had been replaced.
Q Do you want to look at your November 6, 2020, report, page 6?
A Then, yes, it was.
Q Okay. So the observations made in your first report that --
MR. ABRAMS: Can I switch you to Irmiter slides? Let's start at 13.
Q (BY MR. ABRAMS) All right. So this is -- we're looking at phase 5, right?
A Yes.
Q Okay. But when you got there, this had all been repaired, correct?
A Correct.
MR. ABRAMS: Go to the next slide.
Q (BY MR. ABRAMS) Can we agree that that's fire damage?
A Yes.
Q Okay. This slide -- by the time you got there, this had been repaired, correct?

A Correct.
Q And we can agree that's fire damage?
A Yes.
MR. ABRAMS: Can we go to the next slide?
Q (BY MR. ABRAMS) Same question. Windows are out. This has been repaired. The windows --
A Well, in this picture, the windows had been replaced, yes. I can't -- there was not anything done to the wood framing or anything.
Q Right. I'm referring to the windows.
A Yes.
Q Okay. Because you put in your report, in your July 26th, 2019, report, you noted a lack of melted siding or burn marks in those areas, but you didn't realize they had already been replaced?
A I was figuring it, but I didn't have any -- beyond the fact that they looked new, any indication that they had been replaced.
Q Okay.
MR. ABRAMS: Melissa, can you put up Irmiter 36.
Q (BY MR. ABRAMS) This is -- this is a picture of -- well, do you agree that this is a picture of fire damage to the sheathing on phase 5?
A It does appear to be melted tape.
Q Okay. And that's consistent -- and when you were there,

did you see this type of fire damage to the sheathing on 5?
A The sheathing was not exposed when I was there.
Q Okay. So you didn't get to see this part?
A No.
Q All right. You didn't conduct any destructive testing, correct?
A Correct.
Q All right. You talk about the stucco. Are you aware that Maxus is not claiming any damage to the fire -- stucco damage as a result of the fire?
A They were then. What they're doing now, I'm not aware.
Q You say "were then." What you're saying is FBS, someone from FBS, someone named Frank said, Okay, we think that this is fire damage, right?
A They didn't say "think." They said, This is fire damage.
Q But you don't know whether Maxus is claiming that today?
A I would say no.
Q Okay. And the -- and also you pointed out like the butt ends problem on the siding. Do you remember that? You were asked about that by counsel?
A Yeah.
Q You don't know if Maxus is claiming that, correct?
A No.
Q All right. And you pointed out a bunch of what you saw

was active wet damage as a result of construction defects, right?

A Yes.

Q Okay. And it's -- let's talk about that. It's really important for you when you're analyzing this, if you're seeing something that's actually wet, that tells you that there is a current problem, right?

A Correct.

Q If it was dry, that would indicate something else, right?

A That there was not a problem there.

Q Right. Or, well, let me be more specific. Good point.

If it was dry and rotted out, right, and damaged, that would tell you that there was an initial problem that had been corrected, right?

A Not necessarily. That means there was an initial problem, not necessarily corrected.

Q Okay. But if you would know -- you would agree with me that -- in fact, all the stuff that you saw that was wet indicates a current problem, right?

A Correct.

Q And a construction defect problem?

A Correct.

Q But you're not aware if Maxus is claiming any funds -- any monies for any of that in this litigation, correct?

A Correct.
Q All right. Let's talk about the sprinkler break.
Have you ever spoken to Brad Stiles? He testified here yesterday.
A I don't believe so.
Q Okay. Mr. Stiles, he works for a company called SELC. Travelers brought him in all the way from Alabama.
He was actually at phase 5 the day after the fire. And would it surprise you that Mr. Stiles said that they were in the process of cleaning up phase 5, and there was just a little bit of water on phase 5 after the sprinkler break? Would that surprise you?
A I guess not.
Q And you had some testimony about -- that someone said, contrary to what Mr. Stiles said, that there was no -- no one was cleaning up phase 5 after the sprinkler break, right?
A I didn't say no one was cleaning it up. I don't believe I testified to that.
Q Okay. I misheard you. I apologize. I thought you said that it was -- the water was just left to stand and that no one was --
A I said the water was left to stand. I didn't say no one was cleaning it up.
Q That's not in your report, is it?
A I don't think it is.

Q No. Also you mentioned punch holes to drain water.
A Yes.
Q Remember that?
A Yes.
Q If the floorboard had already been rotted and needed to be removed anyways, is there any problem with punching a hole in the floorboard in order to drain water?
A If that portion was damaged. But there were portions that weren't, according to the ATC report, and differences in mine.
Q Okay. But the -- but would you agree with me that in order to drain water if it's going to be replaced anyways, to punch a hole in it is fine, right?
A I would say yes.
Q Okay. All right. You had this testimony about the globules on the roof, right, and --
A Correct.
Q You tested them, sampled them. These are all -- just so we've got our timeframe, this is -- these are all globules found after the roofs have been replaced, correct, and repaired?
A Incorrect. One of the globules was from phase 4 prior to that roof being replaced.
Q I'm saying repaired. You said you saw patching, correct?

A I did say, yes, there was probably some patching in the roof, yes.

Q Are you aware if Maxus is claiming in this litigation that those globules represent portions of the roof that need -- that were damaged as a result of embers?

A I guess -- Maxus' claim, no.

MR. ABRAMS: Nothing further, Your Honor.

MR. ELY: No redirect, Your Honor.

THE COURT: Thank you, sir.

THE WITNESS: Thank you, Your Honor.

(Counsel approached the bench and the following proceedings were had:)

MR. ELY: Judge, we're not reading any depositions; so Mike is going to move into the rebuttal portion of his case. To the extent necessary, we renew our Rule 50 motion that's already pending before Your Honor.

THE COURT: Okay. Consider it renewed.

MR. ELY: Thank you.

MR. ABRAMS: We're ready, Your Honor, if you're ready.

THE COURT: How long is it?

MR. ABRAMS: He'll be -- I'm not doing it. My colleague is doing it. I think probably 30, 40 minutes. We said about an hour.

THE COURT: Why don't we take a short recess.

MR. ELY: Yes, sir.

(The proceedings returned to open court.)

THE COURT: We've got a witness who's going to take 30, 40 minutes. So I think we'll take a brief recess now, 10 or 15 minutes, and then we'll resume. You're excused for the recess with my admonitions not repeated again.

(The following proceedings were had out of the presence of the jury:)

THE COURT: You had two or three?

MR. ABRAMS: Three. Two live, one video.

THE COURT: And that's it?

MR. ELY: Yes, sir.

THE COURT: All right.

MR. ABRAMS: I think we're in good shape.

THE COURT: I do too. Good deal.

MR. ELY: Thank you.

(A recess was taken.)

(The following proceedings were had in the presence of the jury:)

THE COURT: Can I speak with counsel for just a moment?

(Counsel approached the bench and the following proceedings were had:)

THE COURT: The issue has been resolved. So back on the normal schedule. Once we get through today, we've got a

lot of things to talk about. I won't waste your time now.

MR. ELY: Very good.

MR. ABRAMS: Thank you.

(The proceedings returned to open court.)

ROCCO CALACI, being duly sworn by the courtroom deputy, testified:

DIRECT EXAMINATION BY MS. McMULLIN:

Q Good morning.

A Good morning.

Q Can you please introduce yourself to the jury.

A Hi. My name is Rocco Calaci.

Q And what do you do, Mr. Calaci?

A I'm a meteorologist.

Q And what is a meteorologist?

A A person who deals with weather elements, forecasting, observing, reporting.

Q And where do you work?

A Fort Walton Beach, Florida.

Q Do you work for a specific company?

A Yes, mine.

Q What's it called?

A LRC Services.

Q What do you do at LRC Services?

A I do site-specific forecasting. That means for an exact point. I do site-specific observing. I do data research. I

do general weather consulting, and I do forensic meteorology.
Q And what is forensic meteorology?
A It's basically a reconstruction of weather events after the fact.
Q Tell us a little bit about your educational background.
A I have a bachelor's degree from Eastern Illinois University. I have a master's degree from Troy State University. I've completed multiple meteorology schools through the Department of Defense. I've given many, many seminars across the country on meteorology, things like that.
Q You mentioned your classes or courses at the department of defense. What were those in?
A They were all in meteorology, things like -- we would have things like atmospheric physics, cloud physics, trigonometry, precalculus, tropical meteorology, satellite meteorology. Pick a subject and put meteorology after it, and I probably took it.
Q How long have you been working in the field of meteorology?
A For 54 years. I'm an old guy.
Q Well, tell us a little bit about that. Where did you get your start?
A I got my start in the United States Air Force. I was in the Air Force for 20 years as a meteorologist. And four of those years, I was an instructor of meteorology for the

Department of Defense.

Q And what did you do after that?

A Well, the Air Force then sent me to other locations. But once I retired, I worked on the development of what we call NEXRAD. You know, on TV and you look at the weather portion of it, you see that nice colorful radar with all the different colors? That's called -- that's a Doppler radar or NEXRAD, as we call it, and I assisted in the development of that.

Q And where else have you worked as a meteorologist?

A All over the world. All over the United States.

Q You mentioned this, and I want to mention it because I think it's pretty cool.

Have you worked for the White House.

A I did for four years.

Q What were you doing there?

A I provided daily weather support and weather forecast to the White House for things like, you know, possible events at the White House or when the helicopter had to land or take off from the White House. I even did the weather forecast for the 2004 presidential inauguration.

Q Do you have any certifications or licenses in meteorology?

A I was federally certified as a meteorologist from 1968 to 2007, and then I had a certification from the Norwegian

Institute of Meteorology from 2010 to 2012. And then I was certified for site-specific severe weather forecasting from 2015 to 2017.

Q What do you have to do to keep up those certifications and licenses?

A Too much. First, after graduation from school, then you -- like when I was in the military, for example, you would graduate from your school, your course that was very long. And then you would have to have eight weeks of what they called on-the-job training. After the eight weeks, you have to take a 100-question test, closed book, and they give you three hours. And you had to get 85 to pass.

Then you had to do this every six months to maintain your certification; you know, keeping up with education, things that are happening. So I did that from 1968 to 2007 every six months.

Q So how did you get involved in this case?

A I was contacted by Mr. Mike Abrams. It would be December of 2020.

Q And what did he ask you to do?

A He asked me to basically collect and look at the weather data that occurred on the date of the fire, September 27th, 2018, and to look at the weather data included in the two reports of a Dr. Batterman and a Dr. Schroeder.

Q And how many times in your 54 years of experience have

you done an analysis like this?

A Thousands.

Q Now, why is it important for a meteorologist or a forensic meteorologist to look at weather data in an analysis like this instead of, say, just relying on the data itself?

A You have to understand the source of the data, the reliability of the data, and the applicability of the data at the site-specific location. For example, here, you know, the Metropolitan was 4 miles away from the airport. Well, that's a big distance, and weather could be vastly different at times.

During this time, there was cloud cover, and temperature was 72, dew point was 71. So that told me the cloud cover would be very dense and thick because of the high relative humidity. And, again, because -- when you take data from an airport, it's a wide-open space, so the winds can blow unobstructed.

But when you're in a city and you're surrounded by buildings, the winds can do a variable number of things. So you have to understand the difference and understand how to apply the data.

Q And you mentioned reliable data. How do you know or what did you review in this case that was reliable data?

A The only data that I considered to be reliable comes from the National Weather Service; because other agencies,

they don't go through quality control or verification processes listed by the National Weather Service. We don't know what type of equipment is used by other agencies. We don't know if they are up to the standards. There's a wide variety where data from the National Weather Service has to meet specific standards and regulations.

Q What happens if you use unreliable data?

A If you use unreliable data, there's a good probability that you may have an inaccurate conclusion.

Q Now, we'll go over each one of these in more detail, but what are the conclusions that you came to in this case about the meteorological conditions at the time of the fire?

A I believe there was a low overcast. I believe the temperatures, and I think the winds coming from the airport were at the airport. They don't necessarily reflect what occurred at the Metropolitan during the fire.

Q And what did that cause you to conclude about Dr. Batterman and Dr. Schroeder's reliance on that data?

A That it may have been misinterpreted and that it may be misleading.

Q Did you also visit the property? I forgot to ask you this.

A I did.

Q When was that?

A Excuse me. January 3rd, 4th, and 5th of 2021.

Q We'll get back to that.

Now, based on the data you reviewed and you mentioned a little bit earlier about the temperature and the cloud cover, but what was the weather like on September 27th, 2018, at the time of the fire based on your assessment?

A Again, overcast skies, low overcast, probably around 800 feet as in the airport. The winds would be very light and variable in the conditions at the Metropolitan. And, again, because of dew point and temperature closeness, I would expect the clouds that were overhead to be very thick and very dense.

Q You said something. You said light variable winds. What does that really mean?

A It means the wind speeds are less than 5 miles an hour, and the direction can change at any second. Federal regulations state that if you have wind speeds of 5 -- of more than 5 miles an hour, you have to have a specific wind direction. But when they're light and variable, like under 5 miles an hour, they expected winds to change direction all the time.

MS. McMULLIN: Can you go to slide 2.

Q (BY MS. McMULLIN) Mr. Calaci, I'm going to show you a figure from your report, figure -- or page 4. What are we looking at here?

A That's what we call a surface weather analysis from the National Weather Service, and it shows a stationary front

running along the East Coast through the Southeast, through northern Alabama, out to the Gulf and out to the Southwest.

Q And what day is this for?

A This is for September 27th, 2018, at one o'clock in the morning.

Q And that's at the time of the fire, right?

A Correct.

Q What does this tell us about the weather conditions in Birmingham, Alabama, and at the Metropolitan at the time of the fire?

A I just said that you would probably have low overcast skies and light and variable winds.

MS. McMULLIN: Can we go to slide 3.

Q (BY MS. McMULLIN) Now, this is a figure from Dr. Batterman's report or a part of a figure. But does this map of the Metropolitan show the different phases of the Metropolitan with the correct orientation of north, south, east, west?

A It does.

Q Okay. Did you review videos of the fire event from September 27th, 2018, during your assessment?

A I did.

Q Let's take a look at some.

MS. McMULLIN: Can you move to 4. That was really quick. Can we go back to the beginning?

Q (BY MS. McMULLIN) What were we seeing in this video?
A Well, you're seeing the fire raging on the morning of September 27th.
Q And where is the smoke going toward, if you can tell us from this video?
A That I couldn't tell from this video.
Q Do you know what's on the left here, whether that's phase 1 -- phases 1 through 3 on the left here at the picture?
A I don't know because I don't know where the camera was located.
Q Okay.
MS. McMULLIN: Let's go to the next slide.
Q (BY MS. McMULLIN) Let's take a look at this video. Now, this has been called the security footage video, I think, throughout the trial. It was taken from across the street of the Metropolitan. Have you seen this video before?
A Yes. Four long, boring hours.
Q We are not going to show all four long, boring hours. But can you tell me what the timestamp is or what the stamp on top of the video says?
A It was taken at 13 -- 12:13 a.m. on the 27th of September 2018.
MS. McMULLIN: All right. Can you play it?
Q (BY MS. McMULLIN) Just tell us what we're seeing here.
A You're seeing it from across the street at the southern

side of the building, and you can just see the smoke going in different directions. Like part of it's going to the east. As I was watching it, I would see part of it going to the north. I would see part of it going to the west, which just showed me and confirmed to me the light and variable winds.

Q And are you able to tell where this is? Can you see the buildings in the background?

A At the moment, no.

Q Okay.

MS. McMULLIN: Can we go to the next video.

Q (BY MS. McMULLIN) And what's the timestamp on this video?

A This is 2:04 a.m. on the 27th of September 2018.

Q So a little less than two hours after the last clip we just played?

A Correct.

Q Let's play it. Then can you tell us what we're seeing here?

A Well, now you're seeing the smoke drifting to the west and away -- you know, winds would be light and variable, again coming out of the east and drifting towards the west and then up.

Q So is this consistent with your conclusion that the winds shifted direction throughout the time of the fire?

A Yes.

Q Okay. And if we go back to the map on slide 7. Okay.

Is it fair to say the wind was not going away from the Metropolitan north, east, south the entire time?

A That would be correct.

Q Now, if we go to slide 8.

This is another figure from your report, page 1. What does this photograph tell us?

A Basically what I wanted to do, because the Metropolitan is surrounded by different buildings and streets, I wanted to show what would be the main orientation of any wind. Wind coming from the north would most likely come out of the northeast, and then -- excuse me, northwest. Winds out of the south would have more of a southwesterly component because they're all funneling between the buildings around the Metropolitan.

Q Does this also show the topography of the area surrounding the Metropolitan?

A Yes. It shows that it's surrounded by buildings, you know, in an urban setup or situation.

MS. McMULLIN: If we can go to the next slide.

Q (BY MS. McMULLIN) Does this better show the topography of the Birmingham airport, the Bessemer airport, and the Metropolitan?

A Yes. Again, it looks like, you know, airports are wide open. Again, federal regulations state at airports you have

to have so many feet around weather equipment, so you'd have an unobstructed flow. Whereas, in a city setting, you've got all these different buildings that cause the winds to deflect and move in different directions.

Q Is that the only effect that the difference in topography can have without obstructions and in a commercial area is just the wind direction?

A It can also affect the wind speeds. Sometimes it can decrease the wind speeds, and sometimes it can actually increase the wind speeds based upon how the buildings are oriented.

Q Now, on Monday, we heard from Dr. Robert Schroeder. And you reviewed his report in connection with your assessment in this case, right?

A I did.

Q Okay. On Monday he testified about the mixing height at the time of the fire that he forecasted. Can you tell us what that is?

A Mixing height is a fancy term we use so that -- so when the temperature reaches a certain value, it causes turbulent mixing of the winds in the lower levels; let's say, below a thousand feet.

And on that day, Dr. Schroeder had a forecast of the mixing level at 4,800 feet, but he never said what it was used for, why it was useful, why he needed that. And he never --

from reading his report, didn't place any information on was the mixing level verified, did it actually occur. And because a fire was so early in the morning, we had very dense cloud cover, you wouldn't get the necessary surface heating for the temperature to go up to a specific level and create a mixing height.

Q Let's talk about that a little bit. You said earlier that the cloud cover at the time of the fire was confirmed to have been about 800 feet; is that right?

A Correct.

Q Okay. And what does that mean for your analysis of the fire? What does the cloud cover have to do with any of it?

A Well, the lower the cloud cover, including the density of the cloud cover, it acts like a cap on the smoke. Again, federal regulations state that when meteorologists observe smoke layers, we have to report it. And we also have to report things like the layer, the cloud layer, the -- where the smoke is going, which direction.

So knowing where the cloud layer was at 800 feet, that would act like a cap. So as the smoke would go up and out, it would hit that cloud layer, and then it can go in any direction.

Q Switching topics, one of your other conclusions in this case is that Dr. Schroeder and Dr. Batterman's data that they relied on from the Birmingham, Bessemer airports was

inaccurate, flawed, or misinterpreted. Can you explain what you mean?

A Well, first, again, as I stated earlier, you've got to understand that the weather at the airport and the weather at the Metropolitan, you know, don't always have to be the same. It's kind of like, you know, if you -- if your house was burglarized and the detectives come before they -- come and get the evidence, instead of coming to your house, they went to a location 4 miles away.

You know, you're not going to get the correct information. You have to know what happened at the Metropolitan.

Q And what sources of information did Dr. Batterman and Dr. Schroeder use in their fire analysis?

A They used data, one, from the Birmingham airport 4 miles away and then from the Bessemer airport 16 miles away.

Q And what were the sources of that data?

A The National Center for Environmental Information, which is same as the National Weather Service, and the Weather Underground.

Q And what is Weather Underground?

A It's a website that allows -- it collects a lot of weather data, but they collect it from various sources. They have a network.

A lot of people are weather geeks. I'm a weather

geek. And they put up weather stations in their backyards, you know, to look at the weather. I have one myself. So what they do is they allow you to put up your weather station, connect it to the internet so that all the data that shows up on your weather station goes out to the internet.

The problem with that is we don't know what type of equipment. We don't know if it's been standardized or calibrated. We don't know if it's in conjunction or in accordance with federal regulations.

I can tell you from personal experience, my weather station doesn't meet any federal regulations, you know, but I don't -- I'm not connected to the internet. So I'm the only one who knows what happens.

But anyway, you can have these irregularities in the weather -- in the data in the Weather Underground, and I've seen it happen multiple times. So you have to, again, know the data source and know the reliability of the data.

Q Can you give us an example of one time that you found that Weather Underground source of data was completely inaccurate or unreliable?

A About seven years ago, I get contacted by a friend of mine who's doing data analysis, and he says there's something going on in Las Vegas. He pulled up a weather report from the Weather Underground that showed that there was a station in Las Vegas, north Las Vegas, that hit 99 miles an hour every

Saturday afternoon.

Well, first thing I know, there's no weather that works on a schedule. So I knew it couldn't be weather. So the Weather Underground allows you to actually pinpoint where that data comes from, and I knew the house number and the street of where this data came from.

So I had a good friend of mine who lived in Las Vegas go out to the house. He introduced himself, explained why he was there, and he said, Can you explain why your weather station is reporting 99 miles an hour every Saturday afternoon?

From what I was told, the gentleman, the owner of the house laughed and said that every Saturday afternoon, he took his leaf blower and cleared off his driveway of dirt and dust. And every Saturday afternoon, he put the leaf blower up against his weather station because he liked to see the little cups go around. That reported 99 mile-an-hour wind every Saturday afternoon.

Q If we can go to the next slide. Let's look at a little bit of the data Dr. Batterman relied on. What is this chart?

A This is the information from Dr. Batterman's report and -- on the left or in the middle and on the right are the actual wind measurements from those times from the Birmingham airport.

Q Okay. There's a lot of numbers on here. So can you

just explain to us, for example, on the first line, what are we seeing? What does all this mean?

A On the left side, it says 0053. That's government or military talk of 12:53 in the morning. Dr. Batterman said that there was no direction, but the winds were 3.4 miles per hour. Whereas, the information from the Birmingham airport said the winds were basically from the southeast at 1 mile per hour.

Q Did you find multiple examples of these inaccuracies between Dr. Batterman's data and the National Weather Service data throughout his report?

A I did. And what struck me is that Dr. Batterman had wind information in decimal -- using decimals like four-tenths of a mile an hour. That doesn't occur. Again, federal regulations state that you've got to have only whole numbers.

So like, you know, 5 miles an hour, 6 miles an hour; no 1.7. So that told me that -- I don't know where Dr. Batterman's 3.4 came from.

Q And did you find any times in Dr. Batterman's report where he lists out all of the hours throughout the fire and the weather data for those hours that it matched with your understanding what the National Weather Service said the data was?

A No.

MS. McMULLIN: We can go to the next slide.

Q (BY MS. McMULLIN) Is this the chart from Dr. Batterman's report?

A It is.

Q Okay. Is this just the example of the 3.4 that you saw where it doesn't match up with the other data that he has here as well as your own that you went and reviewed?

A Correct. For example, if you go down to the line and read 1:53 a.m., if you go over to the wind speed, they're saying -- he says it was calm. But at Birmingham airport, well, at 1:53, he has nothing.

Again, the 3.4, if you look down, you go see 3.4, 4.7, those aren't reportable values. So I don't know where he got that data.

Q And on the right, we see Bessemer airport in the top right. Now, you mentioned that he relied on that airport data as well. What's wrong with that?

A It's 16 miles away. I mean, you might want to know what the weather was 16 miles away if you had an approaching storm. But under these conditions, Bessemer airport data is irrelevant.

Q And if we look at the column where it actually says wind direction, where you see the calm, calm, and you see south, southeast quite a few times, is that what Dr. Batterman reported for a couple of hours during the fire?

A He -- well, he was mostly saying they were south,

southeast, but then he was reporting calm. And you could see at the airport, it was south, southeast at 3 miles an hour; south, southeast at 5 miles an hour. And then you turn around and -- but now he's saying 160 degrees, which is totally different, and 3.4 miles an hour.

Q Let me ask you this: South, southeast, if that's reported there, is that where the wind is coming from or going to?

A That's where the wind is coming from.

Q Even if that was correct, if it was coming from the south, southeast, what direction would that put the smoke at the time of the fire?

A It would basically making it go this way.

Q And is that consistent with what you saw on the videos just a couple of minutes ago?

A I saw the fire -- the smoke going in every direction.

Q And you mentioned the site inspection at the Metropolitan. Tell us about that.

A I need to know how the subject property, the Metropolitan, how the winds react there versus the airport. So I went out and did a site inspection, myself and my assistant. We stood at opposing sides of the building around the block like, for example, here, here, or here and here. And what we would do is we'd take simultaneous wind measurements every minute to see what was happening.

And then I compared them to the same time from the Birmingham airport. At no time did the winds from my site inspection match the winds from the Birmingham airport, and they even had different directions.

Now, I wasn't trying to reconstruct what happened the day of the fire, the morning of the fire. I was just trying to show that, again, what happens at the airport does not necessarily reflect what's happening at the Metropolitan.

Q And are you aware if Dr. Batterman or Dr. Schroeder took any site inspections or measurements at the Metropolitan for their analysis?

A I don't know that.

Q And from the data you reviewed and the videos of the fire that you looked at and your own site inspection, were you able to tell whether the variable wind directions at the time and day of the fire were forcing the smoke in one direction or in every direction?

A Well, you could see on the video, they were going in different directions.

MS. McMULLIN: That's all I have.

CROSS-EXAMINATION BY MR. ELY:

Q Good morning.

A Good morning.

Q How are you?

A I'm fine, thank you.

Q I'm Brenen Ely. I'm a lawyer at Ely & Isenberg in Birmingham, Alabama. It's nice to meet you.

A Nice to meet you, Mr. Ely.

Q So couple questions. First of all, I want to start with --

MR. ELY: Can we go to Plaintiff's Exhibit 147, page 12, please.

Q (BY MR. ELY) Do I pronounce your name Mr. Calaci?

A Calaci, yes.

Q Thank you.

So, Mr. Calaci, with respect to the wind speeds at the -- I just want to talk about the wind speeds at the Birmingham airport during the duration of the fire. Did you make a study of that weather service data?

A Excuse me?

Q Did you make a study of that weather service data, the National Weather Service?

A Yes.

Q Can you tell us -- and you understand the fire started around midnight?

A Correct.

Q So can you tell us, is the -- what we're looking at on page 12, the right column, KBHM. What's KBHM stand for?

A That's the identifier for the Birmingham airport.

Q Okay. And so the column I'm looking at on the right is

what the Birmingham airport reading was at these different times the night of the fire?

A Correct.

Q And for us civilians, that's 12:53 a.m., 1:53 a.m., 2:53 a.m., 4:35 a.m., and 5:53 a.m., correct?

A Correct.

Q So do you have any data that you've looked at that shows any wind speeds any higher than 1, 3, 3, 2, and 3 during that five-hour period?

A There were some, yes.

Q What is -- what data did you look at, and tell me those speeds. I need to understand what your research revealed was the Birmingham airport data.

A The Birmingham airport wind equipment records the wind speeds every one minute. So I downloaded the one-minute data from the Birmingham airport. So I had 60 wind observations every hour. And then I matched up the times with Dr. Batterman and reported exactly what happened at that specific time because I had the whole day's worth of one-minute wind speeds.

Q Okay. So the table on the right is coming from your research?

A Correct.

Q Okay. In that period of time, was there any period of time that the wind speeds were higher than 3 miles an hour?

A Yes.
Q Tell me about that. Tell me about those times and what the speeds were.
A I don't have the exact times, but there were times of 5 miles an hour, 7 miles an hour, some as high as 17 miles an hour in the mid morning hours.
Q In the mid morning, that would be --
A Ten o'clock.
Q Okay. The next day?
A The same day, 10 o'clock in the morning.
Q Ten hours after the fire started?
A Correct.
Q Okay. And I believe that you mentioned that you went to the site in January of 2020?
A 2021.
Q 2021. Tell me what you did out there.
A Well, first, I walked around the building. I just wanted to get myself oriented to what was -- the building was shaped like. And then I actually tried to talk to some people if they were there for the fire. I talked to two individuals. Neither one was there during the fire; so they couldn't give me any useful information.

And then I went and we started setting up our -- you could say our wind readings. As I said, myself and my assistant, we stood at opposing sides of the building, took

one-minute wind readings to see how they were from one side of the building to the other. And we recorded those and marked them down so we could see the wind direction, how the wind direction acted.

And then I compared it to those exact same times from the Birmingham airport and found out that what was reported at the Birmingham airport was different from what I was actually measuring at the Metropolitan.

Q Okay.

MR. ELY: Let's take a look at page 20, please, same document.

Q (BY MR. ELY) So as I understand your opinion that you gave in this case, there were two aspects that you were looking for. Number one, you're looking at wind speed?

A Correct.

Q And the second one, you're looking for direction?

A Correct.

Q And if I'm correct in what you did, you were standing on the ground?

A Correct.

Q And were holding a pole up in the air?

A No. I had a handheld. So it was about maybe 7, 7 and a half feet off the ground.

Q So you had a handheld anemometer?

A Yes, I did.

Q And your associate did also?
A Correct.
Q So, you know, 8 feet off the ground, 9 feet?
A She was shorter. She'd be down closer to 6 feet.
Q Okay. Fair enough.

What did you discover about the speed readings you got standing on the ground at the Metropolitan holding up the anemometer compared to the Birmingham airport?

A They were lower. Because as you get lower to the ground, wind speeds start to decrease; whereas, the winds at the airport are taken 33 feet off the ground so that I would expect a difference.

But at the same time, what struck me mostly was, again, was the direction, the variability of the directions.

Q Sure. Let's talk about speed for just a minute. Stay on one thing.
A Sure.
Q Did you determine a percentage of drop in the wind speed from the Birmingham airport readings to what you got at the Metropolitan?
A Based upon the wind speeds at the Birmingham airport, there was no -- the wind speeds would have been about what I got; about, you know, between 1 to 2 miles an hour.
Q Well, so explain to me -- here's what I'm looking at on page 20 of this -- this is your report?

So am I to understand the -- let's go from column to column. The left column there where it says .1, that's the time you're making your readings at the Metropolitan, correct?

A That was at point one, yes.

Q Yes. Okay. So you're standing there with an anemometer at 10:51?

A Correct.

Q And you're reporting a wind direction of southeast?

A Correct.

Q At 1.6 miles an hour?

A Correct.

Q Let's look at the next one at 10:53, southeast 1.7.

A Correct.

Q What were you seeing at the Birmingham airport in terms of the speed?

A It was 5 miles an hour.

Q Okay. So significantly less where you were standing than what it was reading at the Birmingham airport?

A Correct.

Q Okay. And that's to be expected, right?

A It is.

Q So I want to go down to 11:53. Same thing, anemometer. It got a little faster at the Metropolitan; got 3.4. But what's the speed at the Birmingham airport?

A 8 miles an hour.

Q Okay. So less than half?
A Correct.
Q Okay. So if the wind speed the night of the fire was between 3 to 5 miles an hour during that five-hour period we just discussed, what would you expect the wind speed to be at the Metropolitan at the same time?
A Light and variable.
Q 1 and a half miles an hour?
A 1 and a half to 3 miles an hour.
Q Your data here shows that it's reduced by less than half each time.
A On that data point. What you can't -- what's the word I'm looking for? You can't reject the fact that Dr. Batterman took the weather at the airport at 33 feet in the air and then try to use it. Now, if Dr. Batterman had taken -- if there were wind recordings taken during the fire, that would be a more objective comparison because then you could see what was actually happening to what was happening at the airport. But you wouldn't need the airport data because then you would have realtime observations there.
Q Sure.
A But in this case, trying to take data from 4 miles away and then bringing it over to the -- bringing it over to the Metropolitan, like I said, you could have -- we've all been to areas where it's raining in one spot and not in the other,

things like that.

So, again, trying to use the data from the airport to project what was happening at the Metropolitan would be -- would lead you to an incorrect assumption.

Q Okay. Back to my question. The night of the fire, did you have an opinion whether the wind speeds on the ground next to the Metropolitan would be less than what was being read at the Birmingham airport?

A I would think that they would be less because they were getting closer to the ground, but they would still be light and variable.

Q So what we're talking about is if we've got 3 miles an hour at the Birmingham airport, and based on your data and your research and your experiment out there, standing there at the same height, 10 feet the night of the fire, we're looking at a wind speed that is substantially less than even 3 miles an hour, correct?

A We don't know because we don't have realtime observations, but my conclusion would be that they would still be light and variable.

Q And light and variable is less than 5?

A Less than 5, and the wind direction changing rapidly.

Q Okay. And so along those same lines, you said that -- I believe you just told me that you're not willing to make that extrapolation from your data, from the Birmingham airport as

to what the wind speed was at the time -- the night of the fire, correct?

A Oh, I said that I agreed with you that the winds would probably be less than what was reported, but they would still be considered light and variable.

Q Understand. So would you also agree with me that the best evidence of the airflow the night of the fire would be actual realtime video?

A Not having realtime observations, I would say the video would be a very good indicator.

Q Okay. Now, I want to talk about direction for a minute. You mentioned that the direction -- you noticed the direction variation between the airport and the Metropolitan, correct?

A Correct.

Q And you attribute that to the fact -- I mean, we're talking about buildings, right?

A Correct.

Q And things go around buildings, and the Birmingham airport is a 30-foot pole?

A 33 feet, yes.

Q 33 feet. 33-foot pole in the middle of an airfield, correct?

A Correct.

Q So it's a straight shot. So would you agree with me that the lighter the wind, the less the impact on smoke?

A Not at all. Not at all.
Q You won't agree with me that a 10-mile-an-hour wind has a greater impact than a 1-mile-an-hour wind?
A Oh, on that subject, on that, yes.
Q Yes. I'm sorry. That was a bad question. Okay.
So you mentioned in your report that the wind speeds were very low, were lower where you were standing as compared to the Birmingham airport, and you agree you were -- you were 10 feet high, right?
A Like I said, maybe 7 and a half.
Q 7 and a half. Okay. I'm making you pretty tall.
A You're making me pretty tall.
Q Did you go to the top of the Metropolitan and make any wind measurements?
A Excuse me?
Q Did you go to the top floor or the roof and take any wind measurements up there?
A Oh, I don't do roofs; so the answer would be no.
Q So if you went to the roof, can you tell me based on your experience, what would -- would the speeds be more similar to perhaps the Birmingham airport?
A I don't know because, again, this is -- it's situational depending on when you did it. When I went up there, I tried to simulate the same weather situation; meaning, higher pressure, more stable atmosphere. If you went up there when a

storm was approaching, you could have an entirely different situation.

Q Well, sure. And I'm not -- so if you go to the top of the Metropolitan, are you going to get the same directional variations you're going to get on the ground if you're above the buildings?

A You may, yes.

Q Is it going to be -- is it going to be a different -- is the directions of the airflow -- are the directions of the airflow and the air currents going to be different at the top of the building versus on the ground?

A As I said, they could be, yes.

Q Okay. So I want to discuss this real briefly with you. You mentioned cloud cover. We've got a ceiling of 800 feet --

A Correct.

Q -- the night of the fire, correct?

You mentioned that you -- you believe that it was a thick cloud layer?

A Correct.

Q How thick?

A Based upon the data and based upon 54 years of experience, I would say at least two to three hundred feet thick.

Q But what data did you look at to come up with that calculation?

A One, I looked at the temperature dew point at the airport; and, two, the -- I looked at the observations that told me the thickness of the layers.

Q Okay. Did you do that calculation and put it in your report?

A I didn't see a reason why. I would just -- what's interesting is the fact that you have the cloud cover, dense. And based on all my observations for smoke layers, I've always seen smoke going up if it's a low overcast, hitting the ceiling and then starting to spread out over different directions.

Q In this particular instance, you're not stating an opinion about how the plume behaved in relation to the cloud cover, are you?

A No.

Q Okay. So you've not done any studies on how the plume -- a hot plume reacts with a cloud -- with cloud cover, are you?

A I am not.

Q Okay. With respect to the night of the fire, when you looked at the video, made observations, have you done any studies regarding any airflow patterns that were occurring in or around the Metropolitan the night of the fire?

A I did not because we don't have any realtime observation data.

Q Okay. Is it possible that airflow patterns created by a fire or a burning fire could negate any sort of weather data? Meaning, if you have a light prevailing wind, that may have no impact on what's going on at the time of the fire, the airflow around the fire?

A The little that I know about fire science is that sometimes fires can create their own little weather patterns.

Q Okay. But you're not opining on that in this case?

A I am not.

MR. ELY: Nothing further, Mr. Calaci. Thank you very much.

MS. McMULLIN: Just a few questions, Your Honor.

REDIRECT EXAMINATION BY MS. McMULLIN:

Q Mr. Calaci, why can't you or anyone else tell us what the wind speed and the direction of the wind was at the day and time of the fire?

A There was no weather equipment there to record it.

Q And you mentioned light variable winds. That means what for the smoke at the time of the fire?

A That means that it's going to shift. It's going to move. As you can see in the video, I could tell when I was watching it, again, that long four-hour video, lots of time I could see the smoke moving away from the security camera. I could see it moving to the right of the security camera. I could see it moving to the left of the security camera.

Only one time when the firemen threw water on a flame in the corner did I see it billow up towards the security camera. But, otherwise, it was either going to the right away from the camera or to the left of the camera.

Q And what type of wind speed is required for this type of fire event for the smoke to just simply go in one direction the entire time?

A It would probably need consistent, I would say, 10 miles an hour.

Q And you didn't see that here?

A No. There was nothing. It didn't occur.

Q Mr. Ely asked you about your site inspection, that you didn't go on the roof. I know you don't like roofs.

Do you know if anyone from Travelers ever did any type of wind direction analysis at the Metropolitan, let alone on the roof?

A I'm unaware of any.

MS. McMULLIN: That's it. Thank you.

MR. ELY: Nothing further, Your Honor.

THE COURT: Thank you.

THE WITNESS: May I step down?

THE COURT: You may.

THE WITNESS: Thank you.

MR. ABRAMS: Your Honor, you ready for the next witness?

ADAM FARNHAM, being duly sworn by the courtroom deputy, testified:

DIRECT EXAMINATION BY MS. MCMULLIN:

Q Good morning.

A Good morning.

Q Can you introduce yourself to the jury?

A Yes. Ladies and gentlemen, I'm Adam Farnham, fire protection engineer.

Q And you said you're a fire protection engineer. What does that mean?

A Basically I have a master's degree from the University of Maryland, and I've been working in the area of fire protection systems, design, and analysis and the fire growth and smoke growth and transport and things like that since about 1989, something like that. It's sort of a subset of mechanical engineering that deals specifically with fire and fire safety systems.

Q And where do you currently work?

A For Envista Forensics.

Q What does Envista Forensics do?

A We handle a bunch of analyses basically for law firms, insurance carriers, and private parties.

Q What do you do at Envista Forensics?

A I look for -- well, I do analyses on things that break primarily involving mostly fire protection systems and how

they relate to the built environment and people in it, in the environment.

Q What's your title?

A I apologize. I'm probably rushing here.

I am a regional technical leader. I'm in charge of the western region engineers, everything from basically Denver west, mechanical, electrical engineers. And also in charge of the fire protection division, if you will. There's only two of us in the division; so it's a pretty small operation at this company.

But I handle mostly -- I do assignments and quality control for the larger group of guys and gals, but I also will take on casework involving fire protection systems and things like that.

Q You mentioned earlier, I heard failure analysis. What does that mean?

A Basically things that break. We have -- gosh, it's amazing really what breaks out there. A lot of analyses of piping failures that involves like the sprinkler system over our head. If a pipe failed in that due to a freeze or really anything, then they would ask me -- a lot of cases they would have me out to find out, well, who looked at it, when they should have looked at it, what they should have done and why it ultimately failed.

So it's basically dealing with mechanical systems

that fail.

Q And your expertise is in fire protection systems, right?

A Correct, yes.

Q Now, you mentioned your master's degree, but tell us all about your educational background.

A Okay. It started a long time ago. I have an undergraduate from Virginia Tech in Blacksburg, Virginia, about nineteen eighty -- maybe I shouldn't talk about that. Pretty old.

And then I got a graduate degree in fire protection engineering from the University of Maryland in '99. And since then, I also have, what, a certified safety professional designation. I'm a registered fire protection engineer in a number of states, most of the western states.

What else do I do? I wear a lot of hats at the company; so it's hard to break it down. I'm also really bad about speaking about myself.

I have a lot of recurrent education that I'm required to do to keep up on all that. So there's a lot of points involved with that.

Oh, I'm also a certified fire investigator and certified fire and explosion investigator. And those are two separate designations from two different bodies. I'm on the board in the Northwest Fire Investigators Group. And nobody else wanted it, so they gave me the treasurer position.

Q To keep up with these types of certifications, especially the fire investigator one, what are you having to do?

A Yeah. Most fire investigator designations require recurrent training. It's about 40 hours worth of training every five years. The PE designations are very similar in terms that you have to have a number of points for whatever jurisdiction you're in. They have very specific requirements usually for recurring education and things like ethics and various different types of casework to make sure that you're following the laws and rules that are established.

Q And you said PE. I don't know if anybody knows what that means. Can you explain what that is?

A Yes. Yeah. That's professional engineering designation.

Q And you have a license as a professional engineer?

A Yes. So basically that guarantees that I don't just say that I can do fire protection engineering, but I'm actually -- you need to get five years of experience. It's kind of like a trade position, I guess, in a way. You need five years of experience and need to work for people that are willing to sign off on that experience.

Then you have two tests; one, a generic test in matters of engineering; and then a second test in your area of specialty. I had to pass all that.

Q You mentioned you worked at Envista Forensics. What did you do before you worked there?

A Many different things, but similar. I started off back in the day as an insurance authority having jurisdiction working for industrial risk insurers. It's kind of like a fire marshal position where I would do analysis of buildings and structures and make sure they met codes and standards relating to fire protection and building construction.

From there I went -- what have I done? I've been doing this for, gosh, 40 years.

I worked for a forensic firm in the '90s out of Annapolis, Maryland, and that was my first foray into forensics. It was very interesting because I like to figure out why things break, and it just suited me really well.

My wife at the time said she wanted to move to Washington state. So we moved across the country. Then I got a job in Washington working for a design firm where I was the head of the fire protection department where we basically integrated different types of system, like smoke control and sprinkler systems and high expansion foam, things like that, into buildings.

And then from there I went back into forensics, worked for a company called GT Engineering out of Redmond for, gosh, many years. Stayed there way too long, and then got an offer from -- well, Exponent made me an offer after that, and

I was there for a few years. Then I worked for -- sounds like I've had a lot of jobs.

Let's see. I worked for -- oh, EFI Global. And Envista, where I currently work, they were after me the whole time, and I kept saying, No, I'm fine, no, I'm fine. Then they finally made an offer, and I was like, Hold on a minute, I've got to talk to my wife. They finally made me an offer that I couldn't refuse, and so here I am. And I've been here a little over two years.

Q Where is Envista Forensics located?

A We're nationwide, but the office I work out of is in Redmond, Washington.

Q You mentioned an insurance company. Have you actually worked for Travelers Insurance Company as an expert before?

A Yes.

Q Now, how did you become involved in this case?

A They called and asked if -- because on our website, we have a big marketing presence, and our website has a description of things that we can do, and they were looking for someone who could do an analysis of fire growth and smoke transport.

Q And by "they," you mean Maxus, not Travelers, right?

A Yes.

Q And what did they ask you to specifically do in this case?

A Specifically, I was to rebut the report written by Dr. Schroeder and to also look at the fire dynamics involved with this particular fire.

Q Okay. And I think we've heard the term "fire dynamics" a couple of times. Can you explain to us what that really means?

A Basically all fires start off small, and then they grow. And it's the science of dealing with how the fire grows, the heat release rate involved, and what it's -- what the fire is burning, and then where the products of combustion go.

It has to do with fire growth and smoke transport. In fire protection, we use it to determine how to handle the products combustion within the building and also how to construct -- how to recommend buildings be constructed to make them fire resistant, fire hardened. And also for extinguishing systems like the sprinklers in here, if things go wrong, then we can put the fire out hopefully.

Q And in your about 30 years of fire protection experience, how many times have you done an analysis like this?

A Several hundred.

Q You mentioned that you looked at Dr. Schroeder's report. What other materials did you review for your assessment?

A I listed them in my report. I basically reviewed some videos.

Q Handing you Exhibit -- Plaintiff's Exhibit 780. Can you tell us what that is?

A Yes. This is my rebuttal report dated January 15th, 2021.

Q If you need to refer to that at any time while we're talking through things, just let me know.

A Okay. I'll just look here. A bunch of documents. Basically report of Dr. Schroeder, Environmental Analysis Associate's report, report of Stuart Batterman. I have about 20 things: Birmingham police video, YouTube videos, NFPH Association, Standard No. 9 -- sorry. Guide to Fire and Explosion Investigations, Dougal Drysdale, it's an introduction to fire dynamics, Fire Protection Engineering, Fifth Edition, drawings, et cetera.

Q So is it fair to say that you looked at the expert reports, videos, photos, and some standards?

A Yes.

Q Now, after reviewing all those materials and when you're working on your analysis, what conclusions did you come to?

A Basically that Dr. Schroeder was not wrong. I liked his analysis actually of the fire growth up until the point where it reached maximum heat release rate, and then from -- he seemed to just stop at that point. So that was -- that was one of my primary findings. I list other things in there as well.

Q Did you come to --

A Sorry. Go ahead.

Q Did you come to any conclusions about the thermal or heat damage as well from the fire?

A Well, just that there wasn't really enough information to make a thorough conclusion. There is thermal damage in the photographs, but I don't know how deep into the structure that goes based upon just the surface photographs.

Q And we'll get to that a little bit later.

MS. McMULLIN: Can we go to slide 2.

Q (BY MS. McMULLIN) So before we talk about this case and the fire that happened on September 27th, 2018, I want to ask you about a figure from your report. It's on page 7 if you want to look at it there.

A Okay. Here it is.

Q What are we looking at here?

A This is the heat release -- black and white. Engineering textbooks are really dull. I apologize. It's basically the idealized heat release rate of a fire. This is common for all fires. It's time versus -- HRR is heat release rate, and basically -- can I stand and point? Is that okay?

MS. McMULLIN: Sure. Absolutely.

Your Honor, is it all right if he gets up?

THE COURT: You can also mark on the screen.

Q (BY MS. McMULLIN) You can mark on the screen. I forgot

to tell you.

A We have basically low heat release rate in the beginning. Oh, that is so cool. Sorry. Simple things in life are very important to me.

But, anyway, you have a low heat release rate at the ignition phase, and then gradually the heat release rate will ramp up, depending on what it is like. If you have a fuel-induced fire, it's usually very quick relative to time.

Then you have the growth phase where the fire gets pretty big. As we say, nothing burns as a solid. So the fire has to give something back to boil off volatiles that then combust in the presence of oxygen in the air. So the growth will be indicative of how much heat is being given off.

And then it eventually becomes fully developed. In this phase it depends on how much mass you have and how much surface area you have. Like if you light a candle, say, your ignition would be very low, very quick, and then your heat release rate would be pretty flat over time, versus something like, oh, I don't -- like this building, for instance, it went -- it was mostly sticks that weren't really protected. The structural material is dry enough to burn quite well.

So anyway it would -- it would have a much faster growth rate, kind of like what is shown on the drawing. And then after you get to the fully-developed phase, you have less and less mass. It's constantly getting rid of the mass by

burning it and turning it into products combustion. Then you have this gradual decay. And the decay function is similar to growth function in terms of time and depending on how much fuel is there and all that.

The decay usually lasts really longer than ignition growth up to the fully developed phase because things would gradually fall apart. Kind of like a campfire, it gradually just falls apart, and it will still be burning for a long time after the big fire.

Q So for those of us who are not fire science experts, this is the growth stages of a fire?

A Well, it's the whole thing, from the ignition growth, fully developed, and then decay on the back side.

Q Would this happen in every single fire that occurs?

A Yes.

Q Did this happen at the Metropolitan?

A Yes.

Q Okay. Now, you mentioned earlier, and I think it might help to have this figure up, that Dr. Schroeder, your critique of him is that he stopped at some point, his analysis, and he didn't go fully through the phases of the fire. Can you show us what you mean?

A Right about there. So all of this, he covered all of this really well, and then he just didn't talk about that part after reaching fully-developed phase.

Q Okay. Now, on Monday we actually heard from Dr. Schroeder, and he testified extensively about some videos of the fire event, including a security video and some others.

MS. McMULLIN: Can we go to slide 3.

Q (BY MS. McMULLIN) I'm going to show you a -- this is the YouTube video of the fire. Have you seen this before?

A Yes.

Q All right. Let's take a look at it. Can you explain to us what we're seeing here?

A It looks like a shot from about a block away, and it looks like building 6 that's fully engulfed. That is -- I hate to say a good-looking fire, but it's a good-looking fire. My wife always teases me I'd make a good arsonist, but I can't stand to impact people that way.

Basically you have a flame height that's about -- and I can't tell from this video exactly, but there's some other -- there we go. Yeah. Flame height is -- it's about twice the size of the building, and it's about a four-story or five-story building, and the flames are twice that high. So it's well over a hundred feet of flame.

Then it's casting off all these flying brands and things that are just going everywhere in the plume. And that's characteristic of a fully-developed fire.

Q You mentioned this a little bit earlier, but the person taking this video, about how far away was that person?

A About a block away.
Q And these are the embers that he's seeing directly above; is that right?
A Yes.
Q What is this amount of burning embers, or we've heard them called brands as well, what does that mean about the potential for damage at the Metropolitan complex itself since this is a block away?
A It's basically wafting this stuff everywhere. It's got a lot of energy, and it's just throwing everything up in the air in every which direction. So you're going to have flying brands. They'll burn until the mass in them burns out, and it varies in time depending on what it is that's being thrown up there. But the more fire, basically the higher things are cast into the sky and then the larger chunks that you get. So it's a significant damage potential.
Q You mentioned this earlier, but I just want to be clear for the jury. What stage of the fire is this in?
A Fully developed.
MS. McMULLIN: If we go to the next slide, please.
Q (BY MS. McMULLIN) I don't think we actually need to play the clip, but this is a still from that same video a little bit further on. What can you tell us about the fire's magnitude in this image?
A Oh, it's huge. That's probably enough power to power

that town for a few minutes being released all at one time there. It's just -- it's amazing.

I -- there are ways to estimate that. I would need to get a clearer picture of exactly how many megawatts of energy that is. But it's a lot of energy.

Q Can you orient us as to which building is phase 5 there?

A Phase 5, it looks like it's in -- oh, I can draw on this, that's right. There.

Q And it's also the one next to it to the right a little bit?

A Yeah. This whole thing here.

Q I'm sorry, to the left. If you can't tell us from this, it's totally fine.

A Yeah, yeah. I know. I'm sorry. It's taken just far enough away. I keep getting confused because I can see the alcove area on building 6, and it looks like that. Everything past the fire is building 6, but it's actually building 5.

Q From this still image, you can see that the plume and the flame are well above the phase 5 roof; is that right?

A Yes. It's about twice the height of the former structure.

Q On Monday, Dr. Schroeder also testified there was no spread of the fire into the other phases of the Metropolitan. Do you agree with that?

A In my report I point out that there was no evidence of

open flaming combustion in other areas of the complex. But I don't have any information on pyrolysis. And in order to burn things, as I said, you need to heat materials until they boil off volatiles, and then it's the volatiles in the air that end up burning.

So what you have is if you have materials in the adjacent building that are exposed to heat, the fire will generally loft 70 percent of its energy straight up in the plume, and 30 percent of it is radiant heat. This is just kind of a ballpark average. So you've got 30 percent of the radiant heat hitting the other building, and it's boiling off volatiles off that building. It was never taken apart, so I don't know. But there likely is damage to the substructure. I think there's some photos that are probably coming up in a bit.

Q Dr. Schroeder went through a couple of photos, and I think we're going to bring some up as well.

He concluded that the photos didn't show any signs as far as char damage to the other Metropolitan buildings. Have you seen photographs that contradict that?

A Yes. I -- again, it would require me to take the building apart to determine the extent of the damage, but what we're seeing is char damage on the surface. It's likely also damage to the structures underneath.

Q Have you seen this before?

A Yes.
Q Is this in your report?
A Yes.
Q What are we looking at?
A See the damaged siding on the south elevation of building 5. I don't know if it's hardie plank. It's a type of material that as it loses mass, it starts to buckle, and you can see cracks in it, and it's buckled up.

It's basically part of the wall on the building, and it's been just subject to a tremendous amount of heat.
Q So this is damage from the fire, right?
A Yes.

MS. McMULLIN: We can go to the next one.
Q (BY MS. McMULLIN) This is also from your report. What are we seeing here?
A Damaged siding on the south elevation of building 5. This is broken windows, melted window frames, tortured siding, I guess you would say. Again, a lot of thermal impact to this building.
Q Is this what you would have expected to see after that video of the fire on the building right next door?
A Yes.
Q Okay.

MS. McMULLIN: We can go to the next one.
Q (BY MS. McMULLIN) Have you seen this photo before?

A Yes.
Q What is it showing us?
A You've got partially melted window frames in the windows, and you have basically the sticks in building 5. The structural elements are still there, but -- and this is what I'm saying. I can't really determine the depth or the nature of how badly damaged it is, but it's likely damaged because the exterior is so badly damaged that you probably have damage to the sheathing on the inside of the exterior as well.
MS. McMULLIN: If we can go to the next photo.
Q (BY MS. McMULLIN) Is this similar damage from the fire that you've seen?
A Yes.
Q What do we see on those windows? Is that melting off?
A Yes.
Q That would be from the fire, right?
A Yes. These windows are not rated for fire exposure at all; so they tend to break. The glass will expand when it gets bound up, and it doesn't like that and will break. And the window frames tend to melt.
Q Let me ask you this: Would all of the potential damage, the thermal effects from the fire, be visible right after the fire from these photographs?
A Well, yes. What would be visible like on the exterior you could see that, but you need to take that apart to see

what's underneath to see if there's damage to that as well.

Again, if the substrate gets heated to a certain degree, then you'll have partial pyrolization. You won't have open flaming combustion necessarily; but if you had oxygen present, it probably would have burst into flame. But it can't do that because it's covered over, and it doesn't have the ability for oxygen to get to it. But it's still damaged.

Q You mentioned that a couple times. You have to essentially take the exterior off to see what was underneath to see if there was further damage; is that right?

A Yes.

Q If Maxus had done that once they started remediating the property and they found thermal heat damage, would that be consistent with your opinion?

A Yes.

MS. McMULLIN: Can you go to the next slide.

Q (BY MS. McMULLIN) What are we looking at here?

A Let's see. This is zipwall tape on sheathing melted by fire. So this is some damaged sticky tape or zipwall.

Q If this was found underneath the sheathing on phase 5 awhile after the fire, would that be consistent with your conclusion that thermal damage could have occurred underneath the exterior sheathing?

A Yes.

Q Now, have you also looked at photographs from the

reports that you reviewed in this case showing there's smoke or soot damage to the Metropolitan?

A Yes.

Q Go to the next slide. What are we looking at here?

A This is the wall of the parking garage showing essentially soot staining. It's early -- it's visually consistent with soot staining, and I'm -- I'm hypothesizing. At least I can't rule it out, given the age of the garage, which at this point was not very old, that it's probably not biological growth from diesel soot or something like that. The air quality is probably pretty good in that area. But this has what is consistent with residual smoke damage.

Q So if Dr. Schroeder said this was organics, what's your opinion on that?

A Well, residual smoke damage is organic. So he's not wrong. It's just a different source.

Q But your conclusion is this is probably from the fire?

A Yes.

MS. McMULLIN: If we can go to the next slide.

Q (BY MS. McMULLIN) Figure 10, what are we looking at here?

A The same sort of thing. This is roofing siding that has, you know, striations or marking consistent with soot damage.

Q Okay.

MS. McMULLIN: I think there might be one more.

Q (BY MS. McMULLIN) What are we looking at here, figure 64?

A It says on here obvious smoke accumulation on partition wall. I see this a lot when we do fire investigations. We'll go into a building. You work from your outside in. And anywhere you have something that's cooler than the area that's catching on fire, you'll see things like this, where you have agglomeration and basically smoke coagulating on anything cooler than the area where it started.

So this is consistent with smoke accumulation on that. It looks like the back side of wall sheathing or something.

Q So this is an interior wall, right?

A Yes. That's what it appears to be.

Q You didn't write any of these descriptions on the figures, right?

A No.

Q But this is consistent with your conclusion that there could be smoke and soot, visible smoke and soot damage?

A Yes.

Q Now, Dr. Schroeder also testified, and we've talked about what fire dynamics is, but he testified about the airflow that occurred during the fire.

He said that there would have been -- the plume

would have been drawing air through phase 5 into the phase 6 fire. Do you agree with that?

A Yes.

Q Why?

A Because he's doing his analysis up to the peak heat release, and basically when the fire is fully developed, it's going to be drawing air in at a tremendous rate. So it's going to be getting it from wherever it can.

Basically when you have the plume going up and out from being heated, you have to have air coming in to make up the difference. And the air is going to be rushing through pretty much any opening or any open area that it finds to do that. And that's when it's at peak heat release.

As it gradually dampens down, your plume will collapse, not in terms of -- like the plume goes up and then it falls down. It just -- it starts wafting less and less high because it has less and less energy in it. And then at that point, you really don't have any air rushing. Things are kind of wafting around. They're not really rushing at that point. I think we probably have some photos of that too.

Q And just because we are, again, not fire science experts, to me, Dr. Schroeder's conclusion was that, you know, at the active phase of the fire, the smoke would do this.

A Yeah.

Q Go straight up and straight out and wouldn't touch kind

of the buildings next door. Is that accurate?
A Yes.
Q Is that what would happen the entire time of the fire?
A No. That's what I'm saying. Once you get in the later stages of the fire, then you're going to still have products of combustion being evolved, but they're going to hang around. It's kind of like -- this town is known for barbecue, as I understand it. So when you smell your neighbor's barbecue, that's because the plume is not going up. There's not much energy in the Hibachi or whatever, and the smell is hanging around. That's a good one. That's a good thing. This is not.
Q So do you have any analogy that we can use -- is it like a fog machine?
A Yeah.
Q What does the smoke do once it's on the ground at this decay stage?
A It doesn't have a lot of energy in it, so it tends to hang around and basically get into everything that's around.
Q And if we just heard from our meteorologist that the winds were light and variable at the time of the fire, what would that mean for the smoke?
A The smoke would tend to waft in various different directions, and I -- from the size of that fire and the residual char and combustion that you had towards the end of

the fire, you'd probably have a several block radius where you have just smoke hanging around.

Q And how long about does the decay phase last?

A Again, it depends. In this case, I think the fire department left at two in the afternoon the following -- or the same day. So I think they had most of the flame and combustion knocked down at, I don't know, early hours of the morning. So, you know, it lasted a good nine hours, 12 hours.

It probably went on past that point as well because the fire department typically leaves. They don't want to have the manpower stationed there in case they have other incidents to go to, but you'll still have hot spots that develop and things like that.

Q Okay.

MS. McMULLIN: If we can take a look at the next slide. We can go to the next one. As much as I love the formulas, I think we're going to show the videos.

Q (BY MS. McMULLIN) Have you seen this video before? This is the security cam footage from across the street at the Metropolitan.

A Yes.

Q What does the timestamp up there say?

A 13:59. So it's 13 minutes after midnight, according to that stamp.

Q Okay. In general, just what are we seeing here?

A Fire department using aerial apparatus to put water on burning building. Looks like there's a pumper to the right. You've got police in front. This looks like it's a little bit after peak heat release or -- either before or after. I can't see the structure, which is why it's giving me trouble.

Q And you can't see it because why?

A Oh, the -- well, flames and smoke.

Q Right.

MS. McMULLIN: We can go to the next slide.

Q (BY MS. McMULLIN) This is a later part of that same security video, right?

A Yes.

Q What's the timestamp say?

A 2:04.

Q So this is hours after what we just saw?

A Yes.

MS. McMULLIN: Okay. If you can play that.

A What we have here is it looks like we have fire department apparatus on the right with a ladder up putting water on the fire, and the fire is -- the smoke in this is kind of a whitish color, which means they're being pretty effective in terms of when you get a lot of steam in addition to smoke, products combustion. And you're kind of -- you're past peak heat release, and here the smoke is starting to just go everywhere, which is indicative of decay phase.

What I noticed about this was, again, winds are light and variable, but also you can't see the whole -- all the smoke because it's at night. And you've got a lot of illumination in the foreground and some on the parking deck, but you can't really see -- it's -- you can't see where the smoke is ultimately going, but it's hanging around basically.

Q And if we can look right down the middle where that car is in the back, that's the courtyard between phase 6 and phases 1 through 3, right?

A Yes.

Q In your review of this security camera footage, did you see smoke pooling in that area?

A Yes. It's kind of wafting through that area now.

MS. McMULLIN: Go to the next slide. If we can fast forward to about 18 seconds.

Q (BY MS. McMULLIN) Is this exactly what we just talked about?

A Yes. But it's earlier in the fire progression from -- at least according to the way this video is shot and the clips that they're using. So you still have smoke hanging around. It's not all being lofted. And this may -- may have to do with firefighting in one particular area of the burning structure is not putting out quite as much heat as another area at that point in time. And then your smoke will bank down.

Q And is this in that same area we just looked at in between building 6 that's burning to the ground and phases 1 through 3?

A Yes.

Q And this is consistent with your conclusion that the pooling of the smoke, even before the decay stage of the fire, would have gone everywhere?

A Yes.

Q Okay.

CROSS-EXAMINATION BY MR. ELY:

Q Hello, Mr. Farnham. How are you?

A Hello. Good. Thank you.

Q I'm Brenen Ely. I'm a lawyer at Ely & Isenberg in Birmingham. Couple questions.

Have you ever visited the site?

A No.

Q Okay. You mentioned the decay phase, and I think the question that was posed to you is how long does the decay phase last. I want to make sure I understand exactly what your answer to that question is.

So can you kind of go back to the decay phase, tell me when -- what kind of period of time we're looking at when your -- I believe it's your opinion that during the decay phase, the smoke will be more present at the lower levels around the Metropolitan. Is that a fair statement of what

you're saying?
A Yes.
Q Can you tell me how long that lasts?
A Not exactly, but I was bracketing it at probably twice as long as the initial growth phase.
Q Okay. How long was the initial growth phase generally speaking?
A Well, for a fire like this, I think the fire department arrived to a fully-developed fire at about roughly an hour and a half after it likely started. I think there was a passerby seen in that area. So at least three hours, probably longer.
Q So if the fire department arrived, say, at 12:45, you're talking about 3:45 in the morning, maybe 4:30 in the morning?
A I don't think they had the fire out until about four. It would be basically up -- well, up to that point and then after that point, you still have smoldering combustion occurring even after the fire is technically -- the flame and combustion is out, but it's still going to be producing smoke.
Q Okay. And I want to -- and what I'll do is I'll point -- could we point to your opinion.
MR. ELY: Pull up Plaintiff's Exhibit 780, please, and maybe it will be more fair if I show you the part of your opinion. Let's go to page 15, please.
Q (BY MR. ELY) So what I'm really asking questions about, Mr. Farnham, is this paragraph that starts with Schroeder.

Schroeder offered no calculations, experimentation, or observations to support a reported lack of smoke staining in the phase 5 building.

But what I'm really asking about is: The lack of protection to openings on the south side of the building would have resulted in smoke entry after the plume had collapsed. Similarly, smoke would have entered the other phases of the complex and adjacent complexes with the opening and closing of exterior doors and windows and other similar building envelope effects.

So my question is really to the last sentence. How long is that period of time when what you've opined could take place could have taken place?

A I don't know exactly. I would need better information on the timestamps and observations from the site. But it was, you know, several hours at least.

Q Okay. So you haven't done that kind of analysis to determine when -- how long this period of time you're talking about in this last sentence would have lasted?

A Not specifically, no.

Q Okay. And you say it would have lasted several hours. Several hours from what point?

A After the fire was fully extinguished.

Q Okay. So do you have any information with respect to whether any doors were opened or closed on the exterior at any

part of the Metropolitan during this period of time you're talking about?

A No. But what I'm saying here is that you have the smoke hanging around, and if you had anything coming or going, any differential pressure, anything would have moved the products and combustion in that direction.

Q You mentioned differential pressure. That's something new. What are you talking about there?

A All buildings have what's called a neutral axis which depends -- the location of the neutral axis depends on how hot or cold the building is relative to the exterior air around it.

So what I'm saying is you have -- if someone opens a door to go out or come in, if there is an exhaust vent, you also have permeability of the -- oh, what's it called? The barrier on the exterior of the building. All these things will be affected by the smoke in the air.

Q But you haven't done any study as to determine any -- whether any of those things happened or anything about the building, have you?

A No.

Q Okay. And do you have information as to, number one, when the tenants were evacuated from the doughnut building?

A The doughnut building? I saw the police video. I'm not sure if they were in the doughnut building evacuating people.

Q Okay. So you don't have any information as to when all the people were out of the doughnut building or when they might have gone back in?

A No.

Q Okay. And do you have any information with respect to when the power may or may not have gone off in the phase 1 through 4 building?

A No.

Q Okay. And when you're speaking of exterior doors and windows here, what area of the doughnut building are you talking about?

A The area that would be -- well, really, there's so much smoke after this fire, it could be any of them on any side, depending on which way the smoke is wafting at that point in time.

Q Okay. Would the primary exposure be the eastern face that's closest to the fire?

A Logically, yes.

Q Okay. Do you know how many windows are on the eastern face?

A No.

Q Not done any study of that?

A No.

Q Have you reviewed any -- have you seen any photographs, videos, or other data that shows the Metropolitan between six

in the morning and two in the afternoon the next day?
A I don't think I have, no.
Q Okay.
A There are photographs afterwards, but it looks like they're taken a long time after the event.
Q So you weren't asked to do any sort of study of where the -- what smoke was in the vicinity during this decay and post-decay phase, correct?
A Correct.
Q And so what you're testifying to here today is based upon just your assumption?
A It's based on the fire dynamics in the typical fire. This fire in specific, in terms of the amount of mass, it was a large building. It burned very well and thoroughly. So I don't -- I'm not sure I follow you with respect --
Q It was a bad question. I'm sorry.
So regarding this period of time of post-decay. Let's call it decay, post-decay?
A Okay.
Q I understand you haven't seen any video, you haven't reviewed any photographs that definitively can show what was going on with any smoke that may have been in that vicinity during that time. Is that a fair statement?
A Yes.
Q Okay. So any opinion you render about the smoke's

presence in that area during that period of time is not based upon any factual evidence you've received?

A It's based on fire dynamics essentially. Not specifically -- I would really welcome receiving that information. That would be great. You know, it would be nice to further benchmark what I'm saying, but I'm just speaking generally in terms of what you have in terms of products combustion and fire growth and decay.

Q No one gave you that information prior to rendering this opinion?

A No.

Q Now, you mentioned there were some photographs that were shown to you and --

MR. ELY: Can we pull up Plaintiff's Exhibit 8, page 32, figure 41.

Q (BY MR. ELY) I believe we looked at these photographs. At least figure 26 was shown to you. Do you have any idea where that photograph is located on the building?

A No.

Q Have you done any study of thermal damage to the other areas of the Metropolitan as a result of this fire?

A No.

Q You reviewed Dr. Schroeder's report, correct?

A Yes.

Q And I think you testified you were retained to

specifically respond to that?
A Yes.
Q Do you know Dr. Schroeder at all?
A I've worked against him for many years. I don't know him personally.
Q Okay. And did you see a section of his report that dealt with pyrolization and the heat impact of the fire?
A I don't have it memorized, but I recall.
Q I don't expect you to have it memorized. That's fair enough.
Did you have any disagreement with his assessment of the heat impact from the fire?
A I would have to have a look at what he --
Q And if he didn't render an opinion on that, that's fine. I just want to understand specifically.
A No. I was looking specifically at his fire dynamics.
Q So in terms of the heat impact of the fire, you're not rendering any opinion one way or the other as to the actual effects?
A No.
Q And you've not done any studies on that?
A No.
Q And you've not been asked to do that?
A No.
Q So other than being shown these photographs today,

you've not been asked to do that prior?

A That's correct.

MR. ELY: Thank you, Mr. Farnham. I don't have anything further.

MS. McMULLIN: I just have one question, Your Honor.

REDIRECT EXAMINATION BY MS. McMULLIN:

Q Mr. Farnham, you were just asked, and I think Mr. Ely might have said that your opinion was based on an assumption, and you said it was based on fire dynamics. Did you also review the actual realtime footage of the fire from the videos that you looked at?

A Yes. I reviewed all the video data that I had.

MS. McMULLIN: Thank you.

MR. ELY: Nothing further, Your Honor.

THE COURT: Thank you. You may step down.

THE WITNESS: Thank you.

(Counsel approached the bench and the following proceedings were had:)

MR. ABRAMS: The last witness is the witness that appears remotely. He's ready, but I don't know if we -- it will take awhile.

THE COURT: You say it won't take long?

MR. ABRAMS: No, no. It will take awhile. I'm saying he's ready.

THE COURT: Okay. What I'm going to do is give them

a break and do that.

(The proceedings returned to open court.)

THE COURT: You recall yesterday I told you that we'd likely break early today. We have one other witness, and he may be an hour or so; so I'm thinking we may go ahead and break, take a 30-minute lunch break, come back, finish up with that witness, and I'll let you go today.

Sound good?

All right. Let's stand in recess for lunch.

(A recess was taken.)

(The following proceedings were had out of the presence of the jury:)

THE COURT: So what's going on in here?

MR. ABRAMS: I think we're ready.

(The following proceedings were had in the presence of the jury:)

MR. ABRAMS: Proceed? Thank you, Your Honor.

DANIEL BAXTER, appearing by videoconference and being duly sworn by the courtroom deputy, testified:

DIRECT EXAMINATION BY MR. ABRAMS:

Q Please state your name for the record.

Mr. Baxter, can you hear me?

A Yeah. It's a little low. I have my volume turned all the way up.

Q Please state your name for the record.

A Name is Daniel Martin Baxter.
Q Mr. Baxter, where are you today?
A I'm in San Diego, California, in my home office.
Q And can you tell us briefly why you're not in Kansas City today?
A Yes. On the way back from Michigan a little over a week ago, I had a medical emergency and vertigo in my ears, and I've been advised by my doctor not to fly or travel.
Q Okay. Mr. Baxter, what do you do for a living?
A I'm an environmental scientist, and I currently am president and owner of Environmental Analysis Associates, a microscopy testing laboratory.
Q All right. Before we -- can we refer to your company as EAA?
A Yes.
Q Okay. Before we get to EAA, tell us about your background. Start with your educational background for us.
A I received a Bachelor of Arts in physical science with an emphasis in sedimentology and radiation physics. That was back in 1975 from San Diego State University.
Q And tell us what EAA does.
A Environmental Analysis has been in business for various forms actually going back into the 1990s. It currently is a particle analysis, materials analysis laboratory using our expertise in optical and electron microscopy.

Q Tell us about your professional background as an environmental scientist.

A All right. My professional background goes all the way back to 1976. It actually goes further than that as a volunteer working on Scripps Research vessels, but my first formal employment was with the Los Angeles Police Department criminalistics laboratory. I started as a staff research associate, actually was board certified, and did a lot of materials analysis while at the laboratory.

Q And then from there?

A From there, I received a permanent position as a staff research associate at Scripps Institution of Oceanography doing sedimentology and paleoecology work on core sections, including the collection of samples and the analysis by optical and electron microscopy.

Q Okay. And we've heard the term "microscopist" throughout this trial. Are you a microscopist?

A Yes.

Q How does one become a microscopist?

A There really isn't formal training for that. You get training, mentoring in a number of organizations.

I did at the police department, also while working as a volunteer at Scripps back in the early '70s, and then my expertise was further enhanced at the Los Angeles Police Department where I would handle cases dealing with physical

evidence from shoes, hairs, fibers, soil. That experience also then translated. And, of course, it's based on my background in what's called micropaleontology, which is the study of micro fossils, fossil, pollen, organisms, and that is what I did at Scripps Institution of Oceanography back in 1978.

I actually skipped one employment. I also worked at Spin Physics developing magnetic particles for Eastman Kodak to look in high-speed tape.

But back to the oceanography, again, that is primarily micropaleontology.

From there, I actually was hired as a chemist at Science Applications International Corporation from 1980 to 1985. There I used those same skills to look at particles. I actually helped and was on one of the select panels that developed the PLM bulk analysis method for asbestos as well as the TEM, the transmission electron microscopy, method for the US EPA at that point in time.

I actually received a citation from the head of -- and director of the EPA at that time for actually helping develop that method.

As a part of that experience there, I also did a lot of field and laboratory work for science application for a lot of government agencies, including the Nuclear Regulatory Commission, the Defense Nuclear Agency, EPA, the California

Department of Health Services, and a lot of these projects were specifically looking at the application of electron microscopy and optical microscopy to environmental particle analysis.

Q Okay. And if you would, Mr. Baxter, briefly tell us your experience with regard to being a microscopist as it relates to combustion byproducts.

A Well, this actually goes back to the 1980s, but the primary work there was on asbestos and other environmental particles.

But in the '90s, we actually developed methods for looking at combustion particles. And then going forward to the mid 2000s, we started to specialize in the analysis of combustion particles and be able to do what we call differential or assemblage analysis, which is the ability to differentiate char, charcoal, and combustion particles from different points of origin or sources.

That work going forward resulted -- if we skip forward even further, taking that experience, in 2015, I worked on the AIHA wildfire task force to develop methods, and that resulted inevitably in me being a primary author of the 2018 Wildfire Technical Guide, which is the standard in the industry right now. That was published in 2018.

Q All right. Let me -- let me pause you there, Mr. Baxter. We'll come to that in a second.

Tell us -- before we get there, tell us about your committee work with regard to soot and char analysis.

A Well, that committee was -- obviously the wildfire task force in 2017 developed, as I said, the AIHA field guide. I'm also currently one of the primary authors and developed the IICRC, which is a restoration group. And there is a -- under review right now, a standard that is going to be published on wildfire assessment and analysis, and I'm heavily involved with that committee.

Q Okay. Do you own any patents relating to the testing or sampling of particulate material?

A Yes, I do. In 1993, I filed the patent for what is now the air-o-cell, which is the most widely-used slide impaction device in the world.

Q Have you published any articles, professional articles relating to microscopy or combustion byproduct testing? When I say "published," have you authored?

A Yes. Again, I'm listed as, because my name starts with B, the primary author on the Wildfire Guide. Like I said, the wildfire task force. I've also published articles and given technical papers and presentations to the AIHA and to other organizations on the appropriate use of microscopy and fire combustion analysis.

Q So when you say by the way that the wildfire impact or the wildfire guide, right? You mentioned that?

A Yes.
Q Okay. Does wildfires just mean fires out in the wilderness, or does it mean something else?
A No. It actually deals with fires and then looking at the wildfire/urban interface. So it actually can translate. Even though the document is entitled on wildfire, it also involves structure fires as a part of that. And the methods are very similar you would use for microscopy analysis between a wildfire or a structure fire.
Q Mr. Baxter, if you had to estimate the amount of times that you personally as a microscopist analyzed samples for soot and char, what would you estimate those to be? How many times?
A Over the last 15, 20 years, I've easily analyzed over 100,000 samples, specifically for structure and wildfire. Well over 100,000.
Q Mr. Baxter, what was your role in this case? What did you do?
A I was hired to look at the laboratory data from both parties. We call them both sides of this case. Samples collected by Mr. Chris Spicer, also Neil Carlson. And then look at how the sample collection and the methods were applied by all parties in this case.
That is an area of my expertise because of the history I have with how sampling methods work and how they

interface with appropriate methods.

Q Mr. Baxter, after reviewing Travelers' reports and industry standards relating to combustion byproducts and Mr. Carlson's report, did you come to any conclusions?

A Yes. On Mr. Carlson's data, there is evidence he used the primary method, which is optical microscopy, in combination of tape sampling we can get -- in the art world, they call it provenance. What we're really talking about is to be able to not only look at the particles, but also get an idea of what the cause and origin or the source might be.

In regards to the data that was analyzed by --

MR. ABRAMS: Mr. Baxter, can you hold on one second? We need to approach.

(Counsel approached the bench and the following proceedings were had:)

MR. ELY: I want to make sure that we're not getting into an area that is -- Mr. Baxter is not -- is not rendering an opinion in this case. It's specifically limited in his opinions, meaning he's not going to testify about the extent of any contamination in the Metropolitan. I want to make sure that we're not about to venture into the area before -- an area that he has limited himself and there's no expert opinion on that. If he is going to look at the slide, look at the Neil Carlson slides and talk about the specifics of the slides and what is on the slides, that's fine. But if he goes past

that into an analysis of the extent of any contamination, I want my objection on the record because he has not opined on that.

MR. ABRAMS: I don't think so. What he's -- what's in his report is exactly what you said, is that Carlson's work shows that the -- that the samples were from a combustion byproduct from a structure fire.

MR. ELY: To your point you made earlier in the first day, Your Honor, are we talking about what's on the slide or are we talking about what's in the Metropolitan? As long as he's not going any further than what's on that slide, we're fine. I just don't want to get into that.

MR. ABRAMS: He didn't go to the Metropolitan. He's looking at what's on the slide.

MR. ELY: Thank you.

(The proceedings returned to open court.)

Q (BY MR. ABRAMS) I forgot where we were. I apologize. We were in the middle.

Mr. Carlson -- Mr. Baxter, do you remember what question I just asked you?

A You were asking about what was my scope of the engagement with this project.

Q Oh, and your -- the conclusions that you reached.

Let's -- and we can get into them in specifics. Let's do that. First of all, I want to authenticate your

reports.

We sent you and you should have Plaintiff's Exhibit 28 and 784. Those are your -- those are your reports that you rendered in this -- written reports that you rendered in this case, correct?

A Correct.

Q All right. Let's start with Maxus' sampling, and that's the sampling that you -- review was from Carlson, correct?

A Correct.

Q Now, in reviewing Mr. Carlson's report, what did Mr. Carlson conclude regarding whether fire-related particulates were present at the Metropolitan?

MR. ELY: Your Honor --

A He concluded that there are some of those samples --

MR. ABRAMS: Wait. Mr. Baxter, hold on one moment.

(Counsel approached the bench and the following proceedings were had:)

MR. ELY: Your Honor, Mr. Carlson has not concluded anything about whether there's contamination at the Metropolitan. That's what we're trying to stay away from here. If -- as to what is on those slides, what Mr. Carlson concluded, he can answer that question. But the question was, as I recall it, what did Mr. Carlson conclude about combustion byproducts at the Metropolitan.

MR. ABRAMS: Your Honor, I don't see the

distinction. He took samples --

THE COURT: There is a distinction, and you can argue that in argument.

MR. ABRAMS: Okay. I think I'm missing it.

THE COURT: He's going to be able to testify -- as I understand it, he's going to be able to testify to the contents of the slide.

MR. ELY: Correct.

MR. ABRAMS: We're going to do that.

THE COURT: Then the next step is where did the slides come from.

MR. ABRAMS: Fine.

MR. ELY: Okay.

(The proceedings returned to open court.)

Q (BY MR. ABRAMS) Mr. Baxter, you reviewed Mr. Carlson's slides from his analysis?

A I reviewed the photographs that he has taken from that project.

Q And that -- when you say "photographs," those are the micrographs?

A Yes.

Q Okay. And tell us again what a micrograph is.

A A micrograph is a -- in this case a digital image that is collected from the microscope slide at the magnification of the microscope.

Q And they are -- there are different types of sampling that were done by Mr. Carlson, correct?
A Correct.
Q And what types of sampling were those?
A There was some air sampling with the air-o-cell, and then there was also a tape lift sample. There are two different kinds of sample. One is representing the air. The other is representing what would be on the surface --
Q And were --
A -- of the substrate.
Q Were there some bulk samples?
A Yes.
Q And is there a benefit of analyzing different types of samples when you're analyzing a site?
A Well, an air-o-cell is going to tell you what is in the -- what is airborne and quantitatively what is there, and as the particle actually exists. That's a big difference. With air-o-cells and tape lift samples, you're seeing what the original structure is, and that's important to not only get concentration numbers; in other words, relatively how much is there, but also to, again, to look at what is the provenance or the cause. And origin can be also derived from its association with other particles in that sample.
Q So --
A Both of those samples --

Q Go ahead.
A -- preserve the spatial integrity. That is a really important concept that is being able to decide which fire -- what type of fire it may be from.
Q Okay. And you mentioned that Mr. Carlson used optical microscopy, correct?
A Correct.
Q All right. Is there a benefit in your opinion of using optical microscopy to analyze samples like this?
A Yes. Optical microscopy is actually the standard method. The only -- we use light waves in optical microscopy. It's what human eyes see, color, texture, and it's important to have those properties. Visually that is the only way we can actually get an idea of what might be burned or might be unburned. And that's a big difference between electron microscopy. You cannot do that with electron microscopy.
Q All right. We're going to get back to electron microscopy in a bit. I want to still focus on optical microscopy.

I want you to look at what we sent you, Slide No. 2, and we're going to put it up on the screen here, and the jury is going to have to do a little bit of watching a tennis match here between you and what's on the screen.

Bear with us for a second, Mr. Baxter. We're going to get that put up.

Okay. Mr. Baxter, tell us what we're looking at in Slide No. 2.

A Okay. I actually don't have it on the screen.

Q It's not going to be on the screen. You're going to have to refer to the hard copy. The jury is looking at it on the screen. We had some technical issues at the court here.

A So which exhibit is it again?

Q This is the slide. So it's figure 6, the mix -- the micrograph from N.G. Carlson's report, No. 14, page 115. It's slide 2.

Yeah, it's Plaintiff's Exhibit -- so it's -- it's in your report also.

A Okay. So is this -- I want to make sure I've got this. What you have sent me is Exhibit 35. I want to make sure we're operating from the same --

Q No, no. It's the slides. It's No. 2, which is a portion of your report. When I say "slides," from the PowerPoint.

A So am I looking at my Exhibit PL784?

Q It's part of -- yes. It's part of Plaintiff's Exhibit 784. It's figure 6.

A Okay.

Q You with me? And we've called them out from the PowerPoint.

A The page I'm looking at is 8 of 25 of my rebuttal

report, and that is -- on that page, there's figure 4, figure 5, figure 6, and 7; is that correct?

Q What we have is figure 6. What do we see there?

A You're seeing on this photo -- again, it looks like we're looking at a mixed soot cluster that's identified by Carlson. Keep in mind, he is looking through the microscope. He would have more resolution than what it will appear on the page in the photograph. He's seeing a mixed soot cluster.

Q That's your opinion?

A Yes.

Q Okay. So do you have the slides in front of you? Do you have the PowerPoint in front of you in hard copy, Mr. Baxter?

A Let me --

Q The first page says "Testimony of D. Baxter"?

A You're looking at figure 6?

Q Right.

A Yes. Okay. I'm sorry. I want to make sure we're clear. The PowerPoint says "Testimony of D. Baxter." It doesn't say PowerPoint on it.

Q Right, yes, exactly. So you go to the next slide, please.

A Okay. So figure 6 is a mixture that you'd expect to see of soot that looks like a little mixture of char also. These particles are fairly large.

Q Okay. A mixture of soot and char?

All right. And let's go to slide 4, figure 7.

Mr. Baxter, what do we see here?

A This is a classical example of what structure fire soot would actually look like. This is different than what would be from manmade sources, outdoor or diesel. It actually has a long chain of the structure, which is consistent with it being from a nearby source.

Q Okay. And the nearby source, what kind of nearby source? You said --

A It would have to be either a structure fire or a structure fire close by that would be consistent with this photo.

Q Let's go to Slide No. 5. This is from Mr. Carlson's report, and that's his conclusion regarding -- in looking at the slide you just looked at. Do you agree or disagree with Mr. Carlson's conclusions here of the soot and char analysis?

A Okay. So what am I -- in other words, are we looking at the next page after this photograph?

Q Yeah, slide 5 where it says 65, phase 4, top of AC unit in N-S hallway. Do you see that?

A Yeah. He's showing this as a visual area estimate of char being 1 to 3 and soot like 15 to 20 percent.

Q And -- 15 to 20 percent soot, 1 to 3 char. You have any reason to disagree with that conclusion?

A No. Obviously he's provided one photograph from there, and it would have to be an analysis of that slide, which is what he did. So I can't say one way or another the actual quantification on it. That would be something that he would have analyzed looking at multiple fields.

Q But your conclusion is, is that the slide, figure 7, is consistent with soot and char from a structure fire nearby?

A Yes, it would be. That's the most consistent source. It would not be like a bus down at the corner downtown or outside. You wouldn't see that large of a structure or that smearing on that structure.

Q I missed one word. It wouldn't be like a what?

A This is not like it just came in from a bus stop.

Q Oh, a bus stop.

A Okay. Or, you know, an exhaust source or a background soot from automobiles. That is inconsistent with that.

Q Let's look at slide 6. It will be figure 8 on the PowerPoint. What are we looking at here, Mr. Baxter?

A Again, looking through the microscope, there are classical pieces of char in this photograph up in the upper -- the upper left-hand to mid corner. There are also numerous pollen that look like they may have been singed or burned in this sample. So this is -- this photograph itself is consistent with -- seems like mixed sources again.

Q Okay. And singed pollen, that could be -- is that from

a burning tree?

A It could be. Again, I'd have to look more closely at the actual slide this is a photograph of, but that caught my eye right away. You have a number of charred particles besides the actual -- those very angular dark char pieces in this slide.

Q Are -- the char that you're seeing on figure 8, is that consistent with a structure fire from nearby?

A Yes. Or the infiltration of other vegetative sources from outside in addition to a structure fire. So it looks like a mixed source fire to me.

Q So it's both. It's both. You've got char from the structure fire nearby, and you said you've got some burned pollen?

A That's what it appears in the photograph.

Q Okay. Let's go to --

A Again, as a microscopist, I would always like to look at the slide, but -- itself because you get better resolution. But I think if Neil came to this conclusion, if Dr. Carlson came to this conclusion, I would concur.

Q Okay. You can tell just looking at this that this is char; is that right?

A Oh, yes, yes.

Q Let's look at -- if you go to slide 8.

Mr. Baxter, I'm looking at figure 9 in your

PowerPoint deck. What are we looking at here?
A You're looking at another microscope field that has a lot of angular char particles in it. Again, those are consistent with mostly vegetative -- vegetative or a wood source. It could be either -- they're both vegetative, but one might be from lumber. Another might be from burning material outside.
Q And the char that you're looking -- that you're seeing here, is that consistent with a structure fire nearby?
A Yes, it could be. It's consistent with -- again, I would look at this as what other sources might have caused this, but it's consistent with a nearby source, yes.
Q And a nearby source being a structure fire?
A A structure fire that would involve wood or a cellulose source, yes.
Q When you say "cellulose source," what does that mean?
A Well, cellulose is a more general term that would include wood, leaves, twigs, bark. So, you know, the twigs and bark would be coming from an outdoor or nearby source, whereas the char from lumber would be from the wood, and wood is all cellulose.

You know, we have a lot of cellulose materials. You have synthetic cellulose also which would be paper fragments or something else. And, again, you'd have to look more closely at the samples to see if they're mixed with other

cellulose.

But cellulose is a term that we generally use for materials that are made from plants.

Q Okay. And are you seeing here char from a structure fire nearby?

A It could be a structure fire. Again, it looks like it's a mixed source because we have pollen and everything else. You have a mixed source, and it could be a structure fire nearby, yes.

Q Yeah. Because you have different -- you're saying because there's different things in here. So -- is that right?

A Yes.

Q So some of it's from --

A That's a number of reasons that you need to preserve this, is what's surrounding it; what are the other particles it's associated with.

Q So, in other words, if you -- if there were trees that were burned, you could be seeing that here?

A Yes. You could -- and that's what we're doing. We're seeing a mixed pollen source with a char source, and that would indicate that there are -- there's a flowering plant or residual from that or a flowering tree or something. Basically that is indicative of a plant-based fire.

Q So you have two sources here that you're seeing?

A Yes.

Q So let's talk about the sampling that Travelers conducted at the Metropolitan, okay?

You reviewed Travelers' sampling and -- done by Mr. Spicer and the sampling analysis from R.J. Lee; is that correct?

A Yes.

Q Okay. After reviewing Travelers' reports relating to that September 30, 2019, sampling of the Metropolitan, what did you conclude?

A Well, actually it's important to read their report that -- in their own reports, they state that there is no way to use -- or that there is not a standard method using optical microscopy for doing this. And that report is in 2019. They totally ignored number one, the Wildfire Technical Guide that specifies optical microscopy as a primary method.

They have used -- so let me break it down. There are several types of sampling they've done. They have done tape lift sampling, and then they have done wipe sampling. The tape lift sampling, they tried to follow the ASTMD6602 method, which only uses optical microscopy as a screening method, and that's all they did with it.

So their tape lift samples and their optical literally doesn't go any further than just looking for aggregate material and not really an analysis. I didn't see

in any of their reports an actual -- in this industry what we call a certificate of analysis for any of the optical analysis. It looks like they just made some observations before going to the TEM analysis and intended to use that method as their primary method.

Q Let's come back, Mr. Baxter. Let's circle back to that. Let's first talk about the sampling method that Travelers used, okay?

A Yes.

Q What are your opinions with regards to how Travelers sampled the Metropolitan?

A Well, like I said, the tape lift samples, they did collect them. They were not used as any part of the primary analysis.

So they relied primarily on wipe sampling, which is not a primary method. If they would have read the AIHA Technical Guide, they would have seen a lot of information that said the wipe sampling doesn't preserve the provenance.

And as I indicated earlier, that's important to being able to figure out the source of the fire. As a matter of fact, they have ignored Section 7.3.2 in the actual ASTM method that says if you need to look at the spatial integrity, you need to use tape lift sampling and base the analysis on that.

So what they did do was they used wipe sampling, and

then they used subsamples of that wipe, placed the cut samples of that wipe sample -- and this is actually -- this is actually important to understanding how much data you can get.

So what they did is they made 5 to 6 transfers. They took a wipe sample. They cut a sample of that. They put it in a test tube. They put acetone in that wipe to try to extract off the soot, and that is the primary method if we're interested in carbon black.

The problem is we're dissolving the soot particles we're looking for. So what they did is put it in acetone. They put it in an ultrasonic bath. That's what you use to clean jewelry with to get the carbon and all the stuff off of it.

So what they basically did was then destroy the size distribution of the particles that were in there, and then they took basically an eye dropper and evaporated that material directly onto what is called a TEM grid. It is literally known -- it is an actual screen. It's a copper screen that is coated with carbon. It's only 3 millimeters. If you look at a piece of paper in front of you, it's the size of an O on the paper.

So we go from this large white sample to something that is no larger than a dot on a piece of paper. Then they evaporate that onto that piece of paper or onto that grid. That goes into a transmission electron microscope. By the

time it gets to the electron microscope, they diluted what they've wiped on that sample almost 20,000 fold. So you're looking at literally a tiny amount of what was there.

Now, if we are looking for what the ASTM method was intended for, for carbon black, and trying to differentiate both samples of that from something else, that works fine. But for trying to see what is soot on the sample, not carbon black, you basically destroy it.

So the method they used basically eliminates what we're looking for in the diagnostic information we could use to differentiate whether it came from a wildfire, whether it was actually soot from a structure fire. They're left with the residue that they haven't burned away already.

Q Okay. And so is that why wipe method -- wipe sampling is not the recommended method to test for combustion byproducts from a structure fire?

A Yes. We're not interested -- the method being used works well for carbon black, which is elemental carbon. Actually what we've done -- and that's before -- remember, we're talking about before what the electron microscope does to it because that's a whole other issue. Not only have we had one 20,000th of a dilution going in there, the electron microscope itself in that analysis is the second part of the problem.

Q And the second part of the problem is that it burns the

char or soot?

A I think a good way to look at this is an analogy. Anybody who has an oven and wants to put it in self-cleaning mode, okay? My wife usually does that. So the guys may not understand this. But what you do in a self-cleaning mode of an oven is that you basically turn it up very high to clean the oven. Okay. So what do you get rid of?

You get rid of the organic carbon, which is the soot from a lone, uncontrolled temperature fire, okay; like a structure fire, like a wildfire.

So what happens is you heat it to over 500 degrees, and then you open your oven, and it looks a lot cleaner, and it's actually easy to clean off what's there. Why? Because what's left is elemental carbon. That's all that's there. But it is totally different, looks different than what you started with.

Q So would it surprise you if someone used wipe sampling to test for a structure fire and not find any soot or char?

A Actually if you were asking me to choose a method to use so I didn't find it, the method that has been employed here is the method that I would use.

Q Okay.

A And there is one more analogy here that I think is really important so people understand. A transmission electron microscope in its simplest form is no different than

a light bulb. Think about it for a minute. An incandescent light bulb has a filament in it. You apply 120 volts and it glows. That's how we get light.

But it also generates electrons. So if you think about it, if you take a light bulb and extend it out into a long cylinder, it's in a vacuum. That's what an electron microscope is. And then you turn the microscope on, you heat it, and you heat the sample in a vacuum, you'd also get rid of material.

Anyone who has changed a light bulb knows that if you turn it off and try to unscrew it, right away you're going to burn your hand. And that's 120 volts.

What is kind of astonishing in this report, if the photos, micrographs are correct from the R.J. Lee analysis, think about it for a minute. You go from 120 volts, this TEM light bulb, which is what it is, they actually apply 200,000 volts to that filament instead of 120.

So what you've done is you heat the sample. The electron beam heats the sample and burns away what you're looking for. What you're left with is carbon black or elemental carbon. It's changed. It's different material.

Most fires, a structure fire or wildfire are like 50-percent organic carbon, which has carbon and oxygen. It's the kind of stuff we see as resonance material.

Carbon black, what's left over, is nothing more than

a powder, and it is totally different in what it appears. And if we have organic carbon in the sample, and that's what we're looking for, and in the fire analysis, that is what we're looking for. He just burned it away.

So what you're left with are the charred residues of heating that sample to probably 500 degrees or more with an electron beam.

Q All right. Let's -- to that point, let's go --

MR. ABRAMS: Melissa, if you go to slide 11.

Q (BY MR. ABRAMS) Mr. Baxter, if you look at what's in your PowerPoint package as No. 11, and tell us what we're looking at here. This is from Travelers' R.J. Lee report, correct?

A Correct.

Q And what are we seeing here?

A We're seeing an image. If we look at the top image to the left, and I'm assuming we're looking at what says W1, unit 115 is the top of the page?

Q Correct.

A You're looking at the left of an electron -- transmission electron micrograph that has been taken at 80,000 magnifications. You can barely read it. The jury will not be able to read it on the screen, but the first picture at the bottom in the black, you'll actually see it says 200KV. That's 200,000 volts. That's what the TEM was running at.

So that is the photo of what the little, tiny residual structures look like. That grape-like structure is what people use determines aciniform, and so what you're looking at is the residue that's there.

Throughout this report, Mr. Spicer and the R.J. Lee report insists that these are carbon particles that are left over. They've misinterpreted their data, which is to the right.

Q And tell us how they've misinterpreted the data.

A Well, first off, these particles that we're looking at are not aciniform soot particles at all.

Q What are they?

A They think they are, okay. And you can tell that from the graph next to it. And, you know, it's -- I went through all their spectra.

So the jury understands what this is when you put an electron beam on the sample, you actually generate coming back off the sample x-rays, and these x-rays have a different energy. And so what we can tell is depending upon their energy, which if you look at these graphs, what you go is from low energy on the left to high energy on the right.

The axis shows you one, two, three, four, five, up to ten. That is actually the energy coming back. And each element in the periodic table, the chemistry is what we're talking about, has its own energy where we will identify it.

If you look at the peaks -- so what we have is the C, an O, which is carbon oxygen. Then we have some smaller peaks which are -- we've got aluminum, silicone. The big peaks there, the S is for sulfur and the C is for calcium.

This spectrum is a dead ringer for calcium sulfate or gypsum dust.

Q Okay.

A So what we're looking at in this sample is not carbon, ash, and soot. We're looking at calcium sulfate. As I told you earlier, they basically put the sample in acetone and then evaporate it onto the grid. We're looking at the crystallization structure. It's just like if water dries, you'll see a light residue. That's exactly what we're seeing in the photos on the left, but the photo on the right tells them all we're looking at is the evaporated structure, calcium sulfate.

Q Okay. You said --

A Drywall dust.

Q I'm sorry. You said what we're looking at is gypsum dust. Can you explain --

A Yes.

Q What is gypsum dust and where --

A It's the composition of the drywall. And in a wall cavity -- actually if you pull up -- there are some pictures that show --

Q Yeah. Let's go to the next slide, slide 12.

This is from R.J. Lee's sampling. Do you understand that?

A Yes.

Q And Mr. Spicer's sampling. What are we seeing in these pictures?

A In order to get to the wall cavity, they used a saw to cut out a piece of the drywall to access the wall cavity. And you can see that there is -- in figure 29, there's insulation behind there, but what you do see all over the floor, it's pretty messy, is you generate a lot of drywall dust, and you can actually see it's even coloring his shoe in this photograph.

So what you've done in collecting a wipe sample inside this wall cavity is you're collecting probably more drywall dust than anything.

Q And is that what you're seeing in Slide No. 11 with the chemical analysis that was done?

A Yes.

Q Let's go to the next slide, No. 13. Tell us what we're seeing here.

A Again, I'm looking at W2, unit 119?

Q Correct. This is from R.J. Lee's report, correct?

A That's correct. So we're actually seeing another example of the exact same thing. If you look, you will see

those calcium and sulfur piece, the S and the CA. That is the atomic designation on how we differentiate each element.

So we're also seeing carbon and oxygen. We may have some carbon coating on the sample of the drywall dust itself; but, again, the actual substrate that they have is actually what's called a formed bar and then a carbon coating. So the carbon is not just a function of what might be coating the drywall particles, but also the substrate.

Q Okay. And is --

A So, again, it's calcium. They haven't recognized they're looking at calcium sulfate. They're looking at drywall dust.

Q Okay. Let's go to the next slide. This is from unit 121, W3. Is this the same thing?

A Yes, it is.

Q So what they're looking at is drywall dust?

A Yes. Now, there may actually -- I'm seeing some other elements in here; the potassium and magnesium, which would be indicated. And, again, it's going to be hard to see. An MG is for magnesium, and sodium, and then K is for potassium. It's right next to that calcium peak.

But, again, we have -- the major peaks in this sample, the major part of this is gypsum dust.

Q Let's go to the next --

A By the way, what's important, I think, in my own report,

I showed pictures of what happens when you evaporate drywall dust and you get this hexagonal structure; the same thing when you evaporate it.

Q Let's go --

A W4 is what you're looking at now; is that correct?

Q Yeah, W4, 122. Just briefly, are we seeing the same thing here? This is from R.J. Lee. Are we seeing them capturing gypsum dust?

A Yes.

Q Next one, W5, unit 227. Are we seeing the same thing?

A Yes. There may be a little of silicone or other clay or something in there, but it's still primarily gypsum dust.

Q All right. Let's look at the next one, unit 330, W6. Are we seeing the same thing?

A Yes.

Q One last one, W7, unit 306. Are we seeing the same thing?

A No. We're actually seeing in this one that you can now see -- this is probably a soot -- this is a soot cluster, okay? Because look at the carbon peak. And there still is a little calcium and sulfur in this, but I would agree this one is probably a soot particle.

Q Okay. So this is one where R.J. Lee actually found some soot?

A Correct.

Q Okay.

MR. ABRAMS: By the way, can we go back to slide 12, Melissa.

Q (BY MR. ABRAMS) This is the photograph you were looking at, Mr. Baxter, cutting out the wallboard.

Is there a way to do the sampling that -- I know you're not supposed to do wipe sampling, but is there a way to test behind the wall where that doesn't create all this dust?

A There are saws you can use. No matter what, even if you hadn't cut that, you would have the drywall dust in the wall cavity from the original construction. But the answer is there's no way to totally eliminate it. But this looks like the procedure that was used was overly aggressive.

You could have used a really thin blade. This looks like they used like a saw, and that would generate a lot of drywall dust. So a large essentially razor blade. They make these large cutting blades where you can minimize the amount of drywall dust. It doesn't appear that was used at all here.

Q And can you get behind -- can you test in between walls going on the side of wall sockets?

A Yeah. Actually in these photographs --

Q When I say "wall sockets," I meant electric sockets.

A Yes. That brings up a whole other issue, and that is how you select these samples. Your analysis or results are only going to be as good as your sampling preserves the

sample, what you're looking for.

So there is a wall plate, as you can see in both figure 14 and 29.

If you're trying to get an idea of what would have migrated from the inside of that unit into the wall, the first place if I was doing the sample, I would have done is to remove the plate on the electrical outlet and sample on the back side; because if it's going to get in anywhere, it's not going to get in where he cut the sample in figure 29.

It would be where that wall outlet is, and that's the first place I would have tested.

Q Do you have any other criticisms of R.J. Lee of where they sampled?

A The only other issue, because there is mixed partition walls and exterior walls, is that there are a lot of the locations where they actually pulled the insulation out. If we're looking at figure 29, what they actually did, there's probably a photo showing them doing that. Do we want to go to one of those photos where they actually poke the insulation?

Q You can describe -- we'll see if we can pull it up, but you can describe.

A Okay. What they basically did was to try to get to what is called the oriented strand board or OSB. It's what they use a lot in construction instead of plywood now.

What they did was to pull the insulation out and

then go to the back side and take samples off of the board that is on the exterior side of that wall cavity just on the other side of the fiberglass insulation. Okay. And those samples, that would be the last place that I would actually sample if I'm trying to find how far the soot penetrated into a wall.

Q And why is that? Why would that be the last place you would sample if you were trying to determine whether there were combustion byproducts present in the Metropolitan as a result of a nearby structure fire?

A A little bit of this is chemistry and physics. So what happens is that when you have a warm plume from a fire that is either generated in the building or from coming to a close source, everybody has seen it on a water glass, okay? Moisture will condense on a glass with ice cubes in it because the physics and chemistry of gasses, which a lot of gas and fumes, which a lot of wildfire structure fire contain initially, will condense on the first cooler object they can run into.

So I'd do testing on the fiberglass itself first. That's like a cool sponge that would collect the condensing residues, and it also acts like a filter before it could ever get to that exterior wall.

Q Did you see anything in the R.J. Lee report where they tested the fiberglass?

A No, I did not.

Q Okay. I want to go to one last topic, Mr. Baxter. This is the topic of fractal analysis, okay?

And we heard testimony from Mr. Spicer that in addition to the TEM analysis from R.J. Lee, they -- there was some fractal analysis or a report from an outfit called PH2. Did you review that?

A Yes, I did.

Q Can you briefly describe for the jury what is a fractal analysis?

A In simplest forms, fractal analysis determines the roughness or the edges in the perimeter of the -- the ratio of the longest dimension in a particle to the perimeter that it has to go around to complete a full circle. So there is a ratio.

Another way to look at it -- I'm from California. So as I look at it, one way to look at it, if you were to draw a straight line from San Francisco to, say, San Diego, and that would be the length of the dimension you're going to use, and then you were to draw a line following the exact coastline that it would take to get from San Francisco to San Diego, that would be part of the fractal analysis.

Obviously a straight line is the shortest distance, and the fractal is how torturous that coastline is. You'd probably find that it's -- depending upon what unit of

measurement, if you're going to go foot by foot or mile by mile, it could be 10, 20 times longer than the distance.

So all that is, is a ratio of the perimeter to the distance. So it's a measure. And it makes some basic assumptions, which are invalid when we're looking at the analysis we've already described.

Q Let me get to the point. What Mr. Spicer testified was, is that based on the fractal analysis, he concluded that the soot and char found in phase 5 was different than the soot found in phases 1 through 4 and that they came from different sources, okay? Do you agree with that?

A Absolutely not.

Q And why do you absolutely not agree with that?

A Because, number one, we're not looking at the soot, as we described previously. We're looking at drywall dust. That's the first thing.

So we --

Q In other words, before you get to the second thing. I just want to make sure I understand.

The first thing is, is because they've destroyed the soot sample; is that what you're saying?

A Yes. They're only analyzing what wasn't removed from the sample, and all that's left is drywall dust and a little bit of carbon.

Q Okay. And what's your second reason?

A Well, that is part of the second reason is that, first off, we're not dealing with a material as found. By the way, fractal analysis is used throughout the industry in looking at comparing diesel emission sources, a change in diesel emission, atmospheric particles, and most of these are assumed to be elemental carbon and to look at the decay.

And they're looking at actual samples that haven't been -- that haven't been distorted or have been prepared side by side. As I said, to use fractal analysis on what's remaining in the sample is only looking at those that are elemental at best, if not the drywall.

And totally doing that comparison ignores what was removed from the sample that I think the parties that Mr. Havics and Mr. Spicer are actually unaware of what happens when you try to prepare these. And the difference between using that D6602 analysis is literally designed to look at resilient carbon particles, and it doesn't apply to these more long temperature soot materials that are generated from plastics and low temperature resins from wood or woody materials.

Q So finally, Mr. Baxter, if Mr. Spicer concluded, based on fractal analysis, that the shapes of what was found for soot in phase 5 are different than 1 through 4, so then we would know that the soot in 1 through 4 was not the same type of soot that was found in No. 5 -- in phase 5, would you agree

or disagree?

A You can't even do that comparison because of what we have discussed. The shape and the fractal -- there is one other important thing that I forgot.

When we evaporate materials, which is what happened, if we look at their own method, they would take one drop at a time, put it on the grid, allow it to evaporate, then put another drop with more material up to ten times. They're overlapping the debris they're adding to the sample. They've destroyed the spatial integrity, and fractal analysis is based on spatial integrity. So they've artificially created a scenario they're trying to compare that isn't even related to soot.

MR. ABRAMS: Your Honor, I'll pass the witness.

THE COURT: You sure?

MR. ABRAMS: You want me to keep going?

You're going to get college credit for this, Your Honor.

CROSS-EXAMINATION BY MR. ELY:

Q Mr. Baxter, good afternoon. How are you?

A I'm doing good. It's earlier for me than you.

Q Yes, sir, it is. I'm Brenen Ely. I'm a lawyer from Birmingham, Alabama. I represent Travelers. It's nice to meet you finally.

A Yes.

Q So I want to try to go in order here and be -- and move this along as quickly as I can.

So I do want to talk to you a little bit about the state of the science currently in the industry, okay?

A Yes.

Q Is it a fair statement to say that there is a healthy debate in the science -- in your industry right now as to what the proper sampling, analytical methods are for these kinds of soot and char issues?

A Yes. It's probably more than a healthy debate. I think you underestimate it.

Q I was trying to be kind.

So -- and I want to make sure we're clear on this. Is that science evolving?

A Science is always evolving, and that is -- that is part of the issue, is that every investigator or laboratory gets trapped in that evolving science. The answer is yes.

Q So -- and this was -- Mr. Spicer was out at the Metropolitan in September, the fall of 2019, nearly four years ago. You remember that?

A Correct.

Q So is it possible -- to some extent, what was understood in 2019 may not be the case now in 2023?

A That is correct, and there's still -- the knowledge base is based on whether people do a peer review of research and

keep up with that research. As I said, 2018, the Wildfire Guide was published. It went through 24 experts, two years of peer review from a lot of laboratory experts. And I would say in fairness, there are a lot of people in 2019 that actually weren't actually aware of what the standard in the industry was, and they're relying on older methods.

Q Okay. Mr. Abrams mentioned that you are currently on the subcommittee for the IIRC? I can't get the acronym right. I'll let you do that.

A It's IICRC.

Q Thank you.

A The answer is yes.

Q Are you the chair of that subcommittee?

A No, I'm not.

Q Okay. Is Mr. Spicer on that committee with you?

A Yes, he is. Chris and I are good colleagues and friends. We spend a lot of time talking about methods, yes.

Q In fact, you all used to work together back in the old days, didn't you?

A Oh, yes, going back to the 1980s with asbestos, yes, we did. We were part of parent companies, yes.

Q So Mr. Baxter, since you've known Mr. Spicer all these years, do you have an opinion as to his integrity and his character as a scientist?

A I have great respect for him, yes.

Q Okay. And you just happen to disagree with what he did in this case?

A Yes. He would probably, after spending a lot of time on these committees, realize that if we were going to do this again today, we would probably use the advanced and evolving methods, yes.

Q So in 2019 was the TEM analysis, the tape lifts, the wipe samples, all the stuff you talked about, I'm going to try not to go back through all those details, but was that at least an acceptable practice in the industry, whether you agreed with it or not?

A Well, in 2018 -- going back to 2015 even, there was a lot of debate. In 2018, in April, the guide was published. And since that time going forward, it's kind of been recognized as the standard in the industry.

Of course, there's a lot of disagreement over it.

Q Sure. But are you stating an opinion that Mr. Spicer wasn't following an industry standard when he went out to sample the Metropolitan?

A He was relying on information, which is really common, from the laboratory is the best way to go out and do this, and he was following that.

Q Was that typical in the industry at the time?

A Yes.

Q Is that still typical in the industry to some degree?

A We have a lot of people that are fighting the science. That is what happens. But the science is pretty staunch in what is appropriate to try to determine and differentiate fires. The idea of using optical microscopy in 2019, there's a large body of work and a lot of people who accepted that as the consensus, and there are those that didn't.

Q And so the AIHA guide was published in 2018, correct?

A Correct.

Q And so some of the criticism that you had, I heard from Mr. Abrams, was Mr. Spicer's -- let me back up and ask you this question.

I read in your reports, there was some debate over the primary combustion byproduct you would be looking for from this kind of structure fire. Do you have an opinion on that?

A Well, I have an opinion on structure fires in general. There are all kinds of materials. And depending upon what burns precisely, will generate a different -- what we call an assemblage within those particles. I think it's important, because the word "assemblage" is coming up all the time, did come up. That's a grouping of particles found together that help determine a source, and that varies from fire to fire.

And unless you go real in depth, the differentiation and determining whether you have various sources is based on that assemblage, okay? And, you know, having a mixed source with the looking -- where I've looked at these photographs, it

appears consistent with a mixed source, as I said.

Q Okay. Let me -- I'm going to read you something from your report. Do you have your report handy there physically?

A Yes, I do.

Q And what I'm looking at is the October report, which is Plaintiff's Exhibit 28. You may not have the exhibit number.

I'll read you the passage. We don't need to put it -- you don't need to find it. I'll just read it and see if you agree with me.

A All right.

Q In your report on page 16 in the second paragraph, it states: In structure fires, including the Metropolitan building, in parentheses, the most common and primary fire generator residue found depositing on building surfaces is the aciniform soot from the melting and combustion of organic finishes, plastics, and synthetic materials.

Char particles are also present from combustion of cellulosic and other carbonaceous materials. However, these are not the particles that typically infiltrate and are found on wall cavity surfaces as a direct result of smoke from an indoor structure fire.

You recognize that?

A Yes.

Q So am I correct that it has been your opinion throughout this case that the primary combustion byproduct that we're

looking for from this fire is soot?
A That's correct.
Q Okay. And you mentioned something -- Mr. Baxter, you issued a report during the claim back on May the 5th of 2020. Do you remember issuing that report?
A Yes.
Q And in that report -- and I can read you the sentence, but I'll just ask you the question instead.
Do you recall referring to this -- making the assumption that this fire was interior to the Metropolitan phase 1 through 4 building?
A Yes.
Q And where did you get that information?
A That was relayed by Mr. Irmiter. And following that, he'd indicated that it was more of a nearby source after we had additional conversations.
Q So you now know that the fire at issue was not, in fact, inside the doughnut building; rather, it was in a different building to the exterior?
A That's correct.
Q Okay. And so with respect to your commentary with regard to Mr. Spicer and his selection of the locations, you mentioned that the -- is it -- are you operating under the assumption that the migration of the soot from the fire is working from the interior spaces into the wall cavities?

A That is one possibility. I also understand that there is not blocking on some of these ceilings; so it actually could be coming in from the top and then translating through holes drilled in the stud, from stud bay to stud bay.

Q Okay. Do you understand that there's a -- there is a suggestion that soot from the fire could have migrated in from the exterior envelope?

A Yes. But that still doesn't change my opinion on the location of the sampling that was actually conducted by Mr. Spicer.

Q Okay. I'm going to go to your report again on page 15 from October, and I'm going to go to paragraph 4 there and ask you to take a look at that if you would. You have that with you?

A Is that Exhibit PL784, the one you're referring to?

Q Well, the PL784 -- I'm not sure what you have. Mine is --

A Is that -- I guess is that my December report?

Q What I've got is Plaintiff's Exhibit 28, which is your October report in this case. If you don't have it, I can just read it to move things along.

A Yeah. Go ahead and read it.

Q If you trust me to read it, I'll just go ahead and do that.

A Okay.

Q Paragraph 4: Based on the sampled locations given in the GBTS -- now, GBTS is Mr. Spicer, correct?

A Correct.

Q Given in the GBTS report shown in appendix 2, quote, photographs of sampled locations, unquote, the locations with the highest potential fire residue deposition and contamination are the fiberglass wall insulation facing the interior of each room or the interior drywall, and not on the OSB, oriented strand board, on the exterior perimeter wall where GBTS collected both their wipe and tape lift samples. These exterior wall cavity wall locations would be representative only if the smoke came into the wall cavity through the exterior penetrations of the building envelope.

So the question back to you, Mr. Baxter is, if you're testing to determine if there's been exterior infiltration or penetration from the outside of the building, does that sentence, that last sentence I read to you, are you in agreement that the back of a wall cavity is the appropriate place to test?

A No. Because where those -- I looked at all the locations where they'd been, and they are still at the base of -- down at the base of the wall. It's not going to migrate through the exterior envelope of the building and through the OSB board. You wouldn't be testing that.

If it's coming through through other penetrations,

through attic or soffit spaces, you would be -- you wouldn't be testing in those locations. Those would be different testing locations. It doesn't change the actual opinion of mine on whether that sampling location was appropriate or not.

Q So that last sentence, that exterior wall cavity locations would be representative only if the smoke came into the wall cavity through exterior penetrations of the building envelope, you no longer believe that to be true?

A No. I'm saying that is the only place it would work is if you actually have a penetration. You have a pipe or you have some other way of it coming through the OSB to that interface between the fiberglass and the outside wall. That would -- it would be the appropriate location if I was sampling right next to where there's an exterior pipe or conduit or penetration. I would do the exact same thing.

If it was from outside, then I would be looking at that conduit that penetrates right through to the exterior side of that wall cavity. That would be the only time it would be appropriate to sample in some of those locations where Spicer has sampled. But you've got to show me there's a penetration from the outside where he sampled it to make that a valid location.

Q Okay. Mr. Baxter, are you aware -- do you know whether all 20 samples were taken within finished wall cavities?

A No. Some of those, I've been made aware of that later

in looking at photographs, are partition walls. So some of your locations are not exterior walls. They're interior partition walls.

Q Have you -- are you aware that five of the samples were taken in spaces that were unfinished with no Sheetrock or insulation?

A I'm going to have to see the photos. Again, the interpretation of each area and exactly what happens, I'm the laboratory and evaluating the laboratory results. Those locations are literally the expertise of Mr. Irmiter and Mr. Spicer.

Q Okay. And I understand that, Mr. Baxter. But you also understand you have -- you just testified that you were critical of the locations that Mr. Spicer chose. So if you're now deferring to Mr. Irmiter and Mr. Spicer, that's fine. I just need to understand that.

A No, no. I am still -- I'm still critical. The correct locations would be near actual penetrations. Whether it came from the interior or the exterior, you'd be sampling near those penetrations where the soot would originally condense.

Q If you were sampling in unfinished spaces, would you agree that it's -- that the appropriate sampling location could be on an exterior wall?

A It could be, depending on the situation, yes.

Q Great. Thank you.

So I want to shift gears quickly to your criticisms of the sampling methods that Mr. Spicer used, and I believe with -- I want to be specific, specifically talking about the wipe sampling and the TEM analysis. Okay?

A Yes.

Q You with me?

A Yes.

Q So I understood your testimony to basically say that you -- it's one of the worst testing methods you could have possibly chosen. Is that a fair representation?

A It's unknowingly, because a lot of the field people don't know it, but that is the wrong way to collect the sample for the task at hand.

Q Is it --

A It is the specified method for carbon black, ASTM D6602. You referred to the controversy. The controversy in this industry is that there are a lot of individuals who do not understand that that method within the method says you can't -- you shouldn't be using it for uncontrolled fires.

Q So, Mr. Baxter, as I understood your testimony, one of the criticisms that you have in the use of the TEM method is how hard it is on the aciniform soot particle; is that right?

A That's correct. You have a method that's designed to cram a larger -- break down a larger sample and put it onto a 3 millimeter grid so you can use the TEM, okay? And it's the

inappropriate instrument.

Q So is a wipe sample also inappropriate media?

A Not for carbon black.

Q Okay. Well, we're talking about soot. And your testimony is that use of a wipe media and TEM analysis was inappropriate; it was wrong?

A Yes.

Q So --

A For the purpose of deciding is it from a fire event.

Q So I've got to ask this question. Mr. Baxter, the AIHA guideline has an entire section on wipes?

A Yes, it does.

Q Okay.

A And it's been carefully written.

Q It's been terribly written, is that what you said?

A Carefully written.

Q Oh, carefully written. I'm sorry.

A It defines on pages 7 through 10, the advantages and limitations of each method. And if you read carefully and look at the entire method after all those advantages and limitations, it says based on that, the consensus and primary method is to use tape lift sampling to preserve the spatial integrity, and to use optical microscopy as the primary method. Whether it's for soot, for char, for all the indicator particles that we haven't talked about here and

would just confuse things, optical microscopy is the primary method.

Q You also -- you also -- I believe your testimony was that the electron microscope, use of the electron microscope also is damaging to the aciniform soot?

A If it is primarily organic carbon, you can heat the sample to almost 500 degrees if you're not careful, whether it's scanning electron microscopy or transmission.

In a vacuum, what you do is the materials that have condensed, the organics that have the odors, that have all the problems that we associate with it will actually burn away when you start going to temperatures of about 200 or 300 degrees in the vacuum chamber. Remember, water boils at like 200. But in an atmosphere if you remove it and put it in space, which is like the chamber of a TEM, it will evaporate at room temperature.

So the problem is you see this happen all the time. In the tens of thousands of TEM analysis that I have personally done for asbestos and environmental particles, you will see these things burn away as you put the beam on them. But when we're doing asbestos analysis, nobody thought anything about it because we were looking for asbestos.

Q And does the AIHA Wildfire Guide also mention electron microscopy analysis as being -- as -- that may be warranted and helpful in determining the presence or absence of fine

nonvolatile combustion soot?

A That's correct. And you just hit on the point. Nonvolatile.

Q Okay. So --

A Carefully written. Like I said, the problem is it's in a vacuum, and using a 200,000 volt electron beam is going to make anything that is semi-volatile disappear.

Q Okay. Mr. --

THE COURT: Let me interrupt, Counsel, for a moment.

MR. ELY: I have one question. Can I finish? Go ahead.

(Counsel approached the bench and the following proceedings were had:)

THE COURT: I was going to see if you would be much longer, we're going to break.

MR. ELY: I've got one question left.

MR. ABRAMS: So far I don't have anything.

MR. ELY: I'll finish.

(The proceedings returned to open court.)

MR. ELY: It may be two or three, but it will be brief, I promise.

Q (BY MR. ELY) Mr. Baxter, we're going to try to get you gone.

Last question, are you in the process -- is the AIHA Technical Guide in the process of being revised?

A Yes. Well, it is version 2. It's supposed to start in September. Actually I made sure Chris Spicer is a part of that.

Q I appreciate that. And I will say this, Mr. Baxter, I am glad to see you. I'm glad you were able to testify for all of us here, and I hope you get to feeling better. Thank you.

THE WITNESS: Thank you.

MR. ABRAMS: One quick question, Your Honor?

MR. ELY: You said none.

MR. ABRAMS: You asked such a good question.

REDIRECT EXAMINATION BY MR. ABRAMS:

Q Mr. Baxter, you were just asked by counsel about the revisions to the guide. Is there any contemplation of revising what you stated about wipe samples in the new revision?

A No. As a matter of fact, talking with approximately 15 of those original contributors, we actually are under the -- we actually felt that there were some things that were an accommodation with advance in science that we would have let in that actually became loopholes for people to continue to use the wipe sampling. We're actually envisioning and expanding the group of people to actually harden those things to make sure people understand where wipe sampling is and is not useful.

MR. ABRAMS: Thank you. Nothing further, Your

Honor.

MR. ELY: Nothing further.

THE COURT: All right. I think that we've completed the evidence in this case. As I said earlier, I was going to let you go. It's a little later than I thought it would be. I feel compelled to read this instruction to you at this time. I'm not going to read it all.

During this recess, that is, between today and tomorrow when the case will be submitted to you, you're not to discuss the case among yourselves or with anyone else, including your family and friends. Do not allow anyone to discuss the case with you or within your hearing. Do not discuss also means do not email, send text messages, blogs, you know, engage in any other form of written or oral electronic communication, as I instructed you earlier.

You must decide this case only from the evidence received by the court here in the courtroom and the instructions on the law that I will give you later. Do not read any newspaper or other written accounts, watch any TV, television accounts, radio account, or listen to any other streamed internet or radio program on the subject of this trial.

Do not conduct any internet research or consult with any other sources about this case, the people involved in the case, the general subject matter of the law. You must keep

your mind open and free of outside information. Only in this way will you be able to decide the case fairly based solely on the evidence received here in court and my instructions on the law.

If you decide this case on anything else, you will have done an injustice. It is very important that you follow these instructions.

I'm going to recess for the day and ask that you report again tomorrow at 8:30, and we'll begin submitting the case to you.

Any questions?

Thank you for your time and your patience.

(The following proceedings were had out of the presence of the jury:)

THE COURT: Why don't you take a few minutes and take a deep breath somewhere besides in here, and then I'll ask you gather with Patricia and Hope and look at these instructions. And then we'll come together again.

(Court adjourned.)

REPORTER'S CERTIFICATE

I certify that the foregoing pages are a correct transcript from the record of proceedings in the above-entitled matter.

_____ Date

_____
/s/Gayle M. Wambolt
GAYLE M. WAMBOLT, CRR, RMR
United States Court Reporter